It's only temporary

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“IT’S ONLY TEMPORARY”

TIME AND LEARNING IN INTER-ORGANIZATIONAL PROJECTS

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TIME AND LEARNING IN INTER-ORGANIZATIONAL PROJECTS

Proefschrift ter verkrijging van de graad van doctor aan de Universiteit van Tilburg, op gezag van de rector magnificus, prof. dr. Ph. Eijlander, in het openbaar te verdedigen ten overstaan van een door het college voor promoties aangewezen commissie in de aula van de Universiteit op vrijdag 24 juni 2011 om 10.15 uur door René Matthijs Bakker, geboren op 30 april 1982 te Nijmegen.

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Introduction

> *"Adaptive combinations of efficient components are familiar to the modern world. Throw-away technologies, where design maximizes short-run efficiency rather than flexibility or reparability, are common in modern engineering. Throw-away personnel policies, where emphasis is placed on selection and turnover rather than on training and learning, have become common in modern business, politics and marriage. In such a throw-away world, organizations lose important elements of permanence. For various legal and other institutional reasons, they may preserve a semblance of continuity – a corporate name and skeleton, for example. But they become notably more temporary, as reflected in the ad hoc construction of project groups or collaborations linked together by constantly changing non-hierarchical networks"*
> - James March, 1995: 434

1.1 Setting the Stage

The root of the trend that James March observes in the above quotation, that organizational science and practice is increasingly moving from permanent organizational forms toward an emphasis on those that are *temporary*[1], seems to lie somewhere halfway the 1960s. In fact, exactly 30 years before March's observation, Warren Bennis first noted that "organizations of the future will have some unique characteristics. The key word will be "temporary"; there will be adaptive, rapidly changing temporary systems" (1965: 34). Claims of this sort, heralding a new, more temporary and ad-hoc logic of functioning of organizations have been repeated on numerous occasions since then (Grabher, 2002a; Palisi, 1970; Söderlund, 2004a). Midler (1995) referred to this as "projectification", i.e. the process by which the organization of work is increasingly manifested in temporary organizational forms, in which people work together on a project basis. Whereas it is well known that some industries have already had a long history of such temporary, project-based organization, like film (Jones, 1996; Sorenson & Waguespack, 2006), theatre (Goodman & Goodman, 1976) and construction (Eccles, 1981; Gann & Salter, 2000), it has since then been proposed to exist in many other industries as well, including software development, advertising, biotechnology, consulting, emergency response, fashion,

[1] What this means exactly be a significant topic of discussion for the next 150 pages or so, so please allow me to come back to this later.

television and complex products and systems (DeFillippi, 2002; Grabher, 2004a; Hobday, 2000; Powell, et al., 1996; Sydow & Staber, 2002; Uzzi, 1996; Weick, 1993). Reasons why such industries would increasingly switch to temporary organizational forms as a preferred form of organization include that there is an increasing need for flexible ways of production, a tendency to try to avoid long term resource commitments, and a need for innovative products and services that are developed ad hoc in the contexts of their application (Duysters & De Man, 2003; Grabher, 2004a).

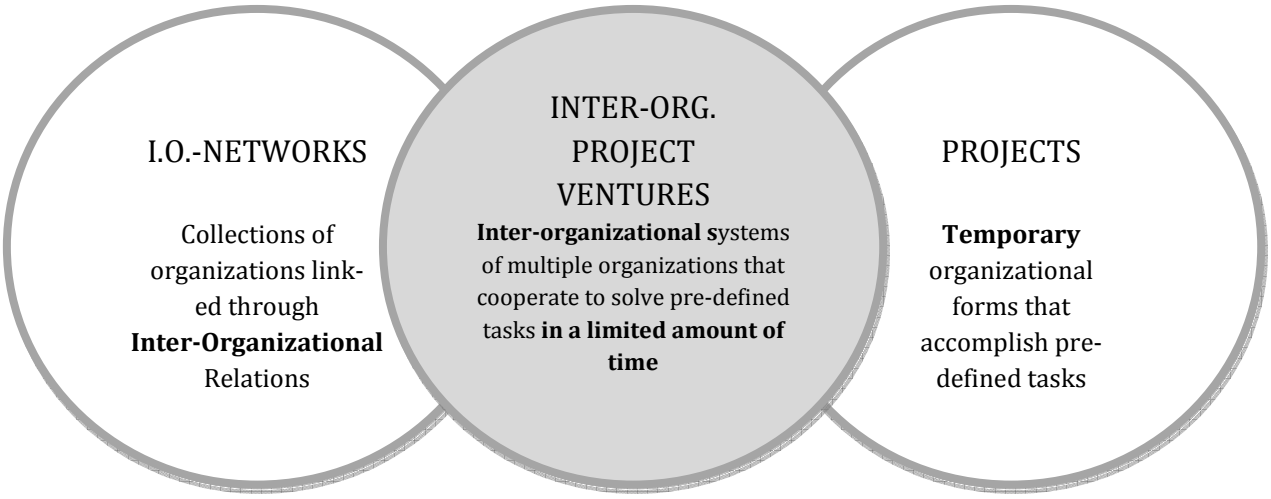
From a broad perspective, this trend, heralding research interest from the permanent to the temporary, actually largely coincides with a second trend in organizational life: economic activities are increasingly crossing the boundaries of formal organizations (Sinha & Van de Ven, 2005). This ongoing *blurring of organizational boundaries* or "intertwining of corporations" (Castells, 2000), takes shape through many types of inter-organizational (IO) relations, from informal relational contracts (Grant and Baden-Fuller, 2004), to more formal strategic agreements, such as R&D partnerships, (international) equity joint ventures, collaborative manufacturing, inter-locking directorates, co-marketing arrangements, direct investment licensing and many other forms (Gulati, 1995; Palmer, 1983; Powell et al., 1996). Historically, firms used to manage their R&D activities mostly internally, only relying on outside sources for "simple" products and services (Powell et al., 1996). Parkhe (1998:417) presents an example of how General Motors Corporation's annual reports in the 1960s contained explicit references *not* to reach out to other firms. But the days in which organizations mainly operated alone have long since gone and inter-organizational collaboration has rapidly proliferated (Hagedoorn, 2002). As a result, firms from a wide range of industries nowadays execute almost the entire production process through some form of external, inter-organizational collaboration (Powell et al., 1996). Both trends (from permanent to temporary, from in-house to inter-organizational) have strong implications for the way economic activities are shaped.

The central tenet of this dissertation is that there is an exciting, yet understudied, type of organizational form that actually "embodies" both the above trends: namely *inter-organizational project ventures* (IOPVs). Such modes of organization are common in areas as diverse as new product development (Eisenhardt & Tabrizi, 1995), movie production (Jones, 1996), R&D (Katz, 1982) and emergency response (Weick, 1993). Consider, for example, the recent Deepwater Horizon oil spill rescue operation. In April 2010, the Deepwater Horizon offshore drilling rig exploded in the Gulf of Mexico. The spill eclipsed the Exxon Valdez disaster as the worst US oil disaster in history (Daily Mirror, 03-05-2010). Within a matter of days, a complex, ad hoc organized operation was rapidly assembled. This inter-organizational constellation included, amongst others, BP, the U.S. Coast Guard, Haliburton, the Secretaries of the U.S. Interior and Homeland Security, the EPA, and the NOAA Administrator to the Gulf Coast. By April 30, over 2,000 people and 79 vessels were working interdependently together to minimize environmental risks of the disaster (CBS News, 30-04-2010). The rapidly assembled group of organizations worked together as long as the oil posed a serious threat to

environmental wildlife. This demanded a tremendous amount of complex, ad hoc, inter-organizational coordination. All parties knew that the organization they were erecting would be of a temporary nature: as soon as the worst was over, the rescue organization would be disbanded. Analyzing how such complex, temporary, inter-organizational projects function, and what makes them successful, is a formidable challenge to organization science.

As the Deepwater Horizon example illustrates, IOPVs are temporary (like projects), yet they span the boundaries of multiple organizations (like IO-networks). IOPVs are often more formally defined as temporary systems of functionally interdependent but legally autonomous organizations that cooperate to complete pre-defined project tasks in a (contractually defined) *ex ante* defined limited amount of time (Jones et al., 1998; Jones & Lichtenstein, 2008; Sydow & Staber, 2002). When the project is completed, the system disbands (DeFillippi & Arthur, 1998; Schwab & Miner, 2008; Sydow et al., 2004). By these characteristics, I would make the claim that as organizational forms, inter-organizational project ventures, quite literally, seem to fall in between projects and networks (see Figure 1.1).

FIGURE 1.1
Conceptual Model of Inter-Organizational Project Ventures as being Organizational Forms in between Projects and Networks



IOPVs have been claimed to be becoming increasingly important in the current fast-pace, inter-connected world that we live in (March, 1995; Whittington et al., 1999). Some have even gone as far as claiming them to be "*the* new unit of economic action" (Boltanski & Chiapello, 1999, cited in Grabher, 2002a: 205). Prevalence and importance, however, are only part of the reason why there should be more concerted research attention toward IOPVs. Namely, besides being prevalent and important, IOPVs are conceptually appealing as well, especially in organizational terms. More specifically, IOPVs, by their very nature, challenge a number of the vested assumptions in

organization theories in both the field of project research and that of IO-network research.

1.1.1 Theories of Organizational Learning

Evolutionary economics sets forth a compelling argument that the survival and growth of organizations is to an important extent determined by firm-specific competencies and dynamic capabilities (e.g. Dosi, 1982; Nelson & Winter, 1982). Such competencies and dynamic capabilities are the result of learning processes (like experience accumulation, knowledge articulation and knowledge codification, Zollo & Winter, 2002) that determine the firm's ability to integrate, build, and reconfigure itself to address rapidly changing environments (Teece et al., 1997: 516). While the dominant theories of organizational learning cater for the fact that economic activities are increasingly crossing the boundaries of formal organizations (Sinha & Van de Ven, 2005), the nature of collaboration is in such theories with little exception viewed as a stable and open-ended process (Schwab & Miner, 2008). In inter-organizational projects, however, the nature of collaboration is temporary. More specifically, inter-firm projects revolve around temporary systems of functionally interdependent but legally autonomous organizations that cooperate to complete pre-defined project tasks in an ex ante (contractually) defined limited amount of time (Jones & Lichtenstein, 2008). This discontinuous logic strongly challenges the supposedly systematic process of how organizational operating routines slowly evolve by learning through continuous performance feedbacks (Zollo & Winter 2002).While anecdotal evidence suggests that some organizations manage to develop durable capabilities and learn through running projects, many do not. Understanding how organizations learn and evolve through projects is thus a fascinating theoretical issue.

1.1.2 Project Management

Second, IOPVs challenge theories in project management. Most work in the field of project management has namely mainly studied in-house projects (Shenhar, 2001a). Being inter-organizational, i.e. crossing organizational boundaries, does, however, pose some important challenges. For one, IOPVs lack a traditional hierarchical structure between the collaborating actors, which has important implications with regard to interdependence, coordination and governance (Jones & Lichtenstein, 2008; Kenis et al., 2009). In addition, needing to cooperate over the boundaries of organizations places an increasing emphasis on trust development and the management of opportunism (Maurer, 2010), and a shift in emphasis from drawing up ad hoc contracts for single projects to long-term relations that need to be managed across project contexts (Dahlgren & Söderlund, 2001). This difficulty is exacerbated by the fact that many IOPVs include multiple (>2) partners (see chapters 3 and 4 of this dissertation). The literature on multi-partner alliances and consortia (e.g. Das & Teng, 2002; Lavie et al., 2007) proposes that the dynamics involved in collaborations of three or more legally

independent parties are fundamentally different from those found in dyadic relation between just two. Das & Teng (2002), for instance, suggest that in multi-partner collaborations social exchange is generalized rather than direct, relying on generalized (rather than direct) reciprocity, and social sanctions and macro cultures (rather than formal contracts) in order to be successfully managed. Lavie et al. (2007) propose that the multilateral nature of collaboration in multi-partner collaborations asks for more complex governance, and that in contrast to dyadic collaborations, parties in such collaborations are more likely to receive different returns from participation. The idiosyncratic dynamics that characterize such multi-partner IO-projects have only rarely been studied.

1.1.3 Inter-Organizational Network Theories

To theories of IO-networks, IOPVs pose a theoretical challenge regarding the issue of "temporariness", and the salience of time and temporality. A number of researchers have called for a more prominent place for the role of time in organization studies (George & Jones, 2000; Orlikowski & Yates, 2002). Their rationale is that although time is a major dimension of social organization (Zerubavel, 1979) and "as fundamental a topic as any that exists in human affairs" (Bluedorn & Denhardt, 1988: 316), it has yielded relatively few systematic research endeavors in organization and management studies, despite some notable exceptions (Bluedorn & Denhardt, 1988; Gersick, 1988, 1989; Hassard, 1991, Labianca et al., 2005; Perlow, 1999; Zerubavel, 1979). Moreover, studies tend to incorporate the role of time as a factor only marginally, rather than focus on it as key variable (Ancona & Chong, 1996). This might have to do with the nature of time as being a somewhat slippery subject (Bakker & Janowicz-Panjaitan, 2009). In Western culture, clock time has come to be the dominant perspective on time. This dominant view of time (also referred to as "natural", "objective", "even" or "chronological" time) is characterized by the assumption that time is independent from mankind and relates to "Newtonian assumptions of time as abstract, absolute, unitary, invariant, linear, mechanical, and quantitative" (Orlikowski & Yates, 2002: 685). This perspective of time is now accepted without question and has become so fully institutionalized in contemporary Western society that alternative perspectives are hard to recognize and grasp (see Bluedorn & Denhardt, 1988). This perspective on time should, however, neither be taken for granted, nor obscure other, more subjective, points of view. According to Mainemelis (2001), there is widespread agreement that time as an external dimension, independent of humans, probably does not exist. All of us have felt the sensation of time passing slowly at some point – when waiting for a delayed flight for example – or, conversely, of experiencing time "fly" when having fun. Therefore, it should be clear that our clock does not produce time, we do. For the purposes of this discussion, I will treat time as an abstract notion with both intra-subjective capacity – varying in and between individuals – and an inter-subjective capacity; socialization in groups forms and constrains our time perspectives (resulting in variation between groups and cultures).

The most obvious role of time for IOPVs concerns temporariness. This "temporariness" means that there is an explicit and ex *ante* defined limited time of interaction between the collaborating partners after which the venture is disbanded (Grabher, 2002a; Jones & Lichtenstein, 2008). This is not a feature of main-stream IO-networks, which, notwithstanding potential fluctuations in membership over time, as a collective form are a more stable and open-ended form of collaboration (Schwab & Miner, 2008). It also challenges theories of organization more generally, as these too tend to think of organizations as intrinsically enduring entities (Ekstedt et al., 1999). Therefore, this dissertation will pay particular attention to temporal factors that are related to inter-firm projects.

Even while the IOPV thus seems to be an important, prevalent, and interesting organizational form to study, the empirical field that has made them a focus of enquiry has only been picking up pace since quite recently (see Chapter 2 of this dissertation). As a consequence, there are a number of important, and urgent, gaps in our understanding of this form of organization that need to be addressed. These I will turn to next.

1.2 Research Problem

As mentioned, there are a number of important dimensions of IOPVs of which we know relatively little, but which are important in our quest to understand this form of organization. As mentioned, one of the overall theoretical concerns of this dissertation is how organizations learn through and from IOPVs. In order to address this properly, however, first some more basic, descriptive issues need to be addressed:

First, where do IOPVs come from? I.e. why do organizations engage in them? What kind of industry characteristics breeds them? It is surprising how little we know about the kind of organizational and market antecedents that drive IOPV formation (see Söderlund, 2004b). Clearly, the above mentioned references to the prevalence of IOPVs, and their instrumental significance for the development of especially innovative and one-off products (see Hobday, 2000; Sydow et al., 2004) underscore how important it is to understand where they come from.

A second important issue where there is considerable room for more concerted research attention concerns IOPVs' implications for the people and organizations involved in them. While there is a considerable body of work on both IO-network outcomes and project performance, one could question to what extent this body of work can be applied one-on-one to IOPVs. The prime reason for this, I will defend in this thesis, is that they are temporary. In fact, as I will elaborate in Chapter 2, one of the most crucial gaps in the current body of knowledge (for IOPVs directly, but for temporary organizational forms more generally as well) concerns our knowledge of the effects of "temporariness". Despite being so fundamental to IOPVs, our current body of knowledge merely consists of conceptual ideas of how the fact that IOPVs are time-

delimited might affect processes and outcomes of IOPVs. In fact, open empirical questions concern, for instance, whether temporary groups are relatively more concerned with the task, and less with relationship building than permanent groups, because they have a limited time frame (Saunders and Ahuja 2006). Moreover, how does this translate into group dynamics such as team cohesiveness, psychological safety and conflict? If groups of people in temporary organizational forms are less relationship oriented, how does this relate to performance (i.e. is it necessary for temporary teams at all to develop relationship oriented phenomena such as team identity and a positive group climate, when all they need to do is accomplish a short-term task?)? Do temporary groups process information differently, for instance heuristically rather than systematically, because of limited duration (cf. Meyerson et al. 1996)? Such research could have broad implications, as we still know relatively little of the effects of time (limits) on a plethora of organizational processes more generally (see, for instance, Ancona et al. 2001; Mitchell and James 2001).

Once these two issues are addressed, a major important issue is how to address the process of organizational learning from IOPVs. As mentioned, the temporary, discontinuous logic of IOPVs strongly challenges the supposedly systematic process of how organizational operating routines slowly evolve by learning through continuous performance feedbacks (Nelson & Winter, 2002; Zollo & Winter 2002). In relation to this theoretical concern, there has recently emerged a growing body of research on project-based learning (e.g. Cacciatori, 2008; Davies & Brady, 2000; Grabher, 2004; Prencipe & Tell, 2001; Scarbrough et al., 2004; Sydow et al., 2004). While this body of research has greatly extended our understanding of the process of project-based learning, it has also yielded a number of ambivalent findings (Chaston, 1998). Scarbrough et al. (2004), for instance, found that the degree and kind of learning taking place in two projects at a water supply treatment organization and a construction firm were entirely different from one another with respect to learning boundaries. As a consequence, several studies have concluded that one of the crucial, and thus far ill-understood, drivers of project-based learning are the specific project contexts in which the learning process takes place (see Prencipe & Tell, 2001; Scarbrough et al., 2004: 1597). Nevertheless, our influential theories of project-based learning rarely seem to take into account the inherent variation between different kind of projects, nor specify propositions toward different types of projects (see Whitley, 2006). In fact, Prencipe & Tell (2001), one of the seminal works on the subject matter, concluded that the current research on project-based learning "calls for some kind of contingency analysis where variables such as size, strategy, task complexity [..] etc. are related to the effectiveness of inter-project learning mechanisms" (p. 1391). It is exactly this challenge that my research attempts to pick up by asking first, is there systematic empirical vaiation between different kinds of IOPVs, and second, what kind of implications does this have for project-based learning? These issues formed the main inspiration for undertaking the multi-method research described in this dissertation, and to the research question below.

1.3 Research Question

Where do inter-organizational project ventures come from, in which varieties do they come, and what are their learning implications for the people and organizations involved in them?

1.4 Research Contributions

Beyond the contributions of the individual chapters, there are a number of overarching contributions that emerged from my multi-method study, that involved a systematic literature review, large N survey research, qualitative case studies, and a controlled experiment.

To the organizational learning literature, my dissertation contributes the insight that organizational learning in and from projects does occur, but that the specific mechanisms that trigger or hinder learning are very specific to certain project contexts. As Tyre and Von Hippel (1997: 71) famously put it, "learning occurs through people interacting *in context*" (emphasis in original), and indeed I found that different configurations of IOPVs demonstrate different learning mechanisms. Above and beyond the empirical taxonomy of IOPVs, and the comparison of learning mechanisms between the types, however, my dissertation research suggest that a substantive amount of project-based learning happens through what I will refer to as *unintended learning*, either from rare events and partial project failures, or through accidental leakage. In both instances, the process of learning taking place seems to be characterized as being a haphazard and emergent process that was forced upon the organization, rather than deliberately designed or planned. This finding has a number of important theoretical implications. For one, it suggests that organizational leaning might be less of a systematic, deliberate process than the way it is usually portrayed in the literature on organizational learning and in project management (e.g. Cacciatori, 2008; Zollo & Winter, 2002). Instead, my study indicates that in the context of IOPVs, with all the uncertainty in terms of task and partners they involve, deliberate learning mechanisms might prove to be extremely costly and uncertain to implement and maintain. Organizations involved in IOPVs rather seem to in many instances learn by unexpected events or failures imposed by rapidly changing conditions. Such unintended learning is closer to theories of bricolage and improvisation (e.g. Baker et al., 2003; Baker & Nelson, 2005) than it is to the kind of systematic, deliberate learning that can be found in evolutionary economics and project management. This finding does not negate recent theorizing on repeatable solutions and economies of repetition that have been proposed in the context of project-based learning (e.g. Brady & Davies, 2004; Cacciatori, 2008; Davies & Brady, 2000). My research in fact supposes that for one dominant type of projects, this might actually be exactly what might be happening. Rather, my research indicates that the process whereby learning actually happens in at least some project-based firms is more uncertain, and less designed, than what studies of deliberate learning have suggested. In short, my dissertation suggests that instead of "learning", in

many project contexts, organizations seem to "get learned" by the unexpected or non-routine events that their projects lead them to.

To the project literature, which has traditionally had an intra-organizational focus (Söderlund, 2004a), my study of IOPVs contributes to the notion that projects are embedded in networks of inter-organizational relationships, and that this embeddedness is important to understand their functioning and performance. This is a clear way in which IOPVs bridge the gap between projects and networks; the idea of embeddedness is fundamental to the network paradigm (Granovetter, 1985) but under-explored in project research (for recent exceptions, see Engwall, 2003; Grabher, 2004a; 2004b; and Sydow & Staber, 2002). In chapters 3 and 4 specifically, I will demonstrate how the majority of IOPVs, contrary to common belief, are repetitive in task focus, and strongly embedded in prior ties between the partnering organizations. This finding implies that the view of inter-organizational projects as being unique entities in all aspects can be questioned. In turn, it provides empirical support for some of the emerging theories of project-based learning (e.g. Brady & Davies, 2004; Cacciatori, 2008; Grabher, 2004b;) which have staked the claim that routine tasks and embeddedness in latent networks between the partnering organizations provide a suitable pretext for knowledge transfer from projects to subsequent other projects (project-to-project learning), and from projects to the organizations involved (project-to-organization learning) (see Chapters 3 and 5). Moreover, I demonstrate that the embeddedness of IOPVs in certain organizations and industries has important implications for their formation (chapter 4).

To the IO-network literature, my study of IOPVs contributes by shedding light on the temporal dynamics involved in inter-firm collaboration. As especially chapters 4 and 6 will demonstrate, the fact that IOPVs are temporary has important implications for team dynamics and learning. Moreover, seen as events with clear temporal demarcations, IOPVs shape the network of collaborators between organizations in a field (Jones & Lichtenstein, 2008; Kenis & Knoke, 2002). My explicit attention to the temporal dynamic in cooperation contributes to the work on time in organizational studies generally (e.g. Ancona et al. 2001) and to that on the role of time for IOPVs specifically (Heide & Miner, 1992; Jones & Lichtenstein, 2008; Schwab & Miner, 2008). Specifically, chapter 6 will demonstrate that there are strong empirical grounds to assume that temporary organizational forms *are* different from open-ended forms of organization by virtue of their temporariness, and that their limited time frame creates different dynamics within project teams. Furthermore, my study of IOPVs contributes a micro-perspective to inter-organizational collaboration, with an emphasis on the project as nexus of economic activity, rather than the firm or the network (see Jones & Lichtenstein, 2008). This choice reflects the concern expressed by Grabher (2002a) that the project is becoming a more and more important unit of economic action, but scholars of organization tend to (predominantly) look at firms. In chapter 5, I demonstrate how by focusing on the project, and its relation to the firms involved, a deeper insight can be gained into the process of organizational learning.

1.5 Research Approach and Data Collection

Complex research phenomena like IOPVs can be studied from multiple levels of analysis and perspectives. Being a relatively uncharted phenomenon, I decided to try to combine different methodologies and multiple sources of data to answer different parts of the research question. This multi-method approach allowed me to answer each part of the research question with the appropriate methodology. In addition, it allowed me to triangulate the findings from these different methodologies (literature review, large N survey research, qualitative case study, and controlled experiment, each with different strengths and weaknesses), into a more thorough understanding of the multi-layered, multi-faceted IOPV phenomenon.

First, in order to gain a thorough understanding of the existing body of literature, and to simultaneously attempt to structure the fragmented bodies of literature surrounding IOPVs, I conducted a systematic literature review (Chapter 2). Given the fact that the subject of IOPVs was quite specific, and there exist a number of reviews of the network literature already (see Borgatti & Forster, 2003; Provan et al., 2007), I decided to position this literature review in the somewhat broader context of temporary organizational forms (see Goodman & Goodman, 1976). This literature search commenced with extracting a number of keywords from labels and definitions that pertained to temporary organization, and limited the search to finding literature with an explicit interest in temporary organizational forms, rather than those which study an organizational entity which might be temporary, but where this variable does not play a part in the study's analyses and discussion. After systematically analyzing this body of literature, it was brought down to 95 key academic works, which would provide the necessary background and footing for my research to build on further.

Regarding the design of my field research, my research question gave rise to two demands. Answering the first part ("Where do inter-organizational project ventures come from [and] in which varieties do they come?") would require a macro-approach: systematically analyzing broad empirical trends in large numbers of organizations. The second part "[..] and what are their [IOPVs] implications for the people and organizations involved in them?") supposed a more micro-understanding.

With regard to the former, answering the macro-part, large scale quantitative data was collected through phone interviews on the kind of IOPVs engaged in by Dutch SMEs. This was conducted in close cooperation with *EIM Business and Policy Research*. There are several reasons why I specifically targeted this research setting.

The choice to target SMEs was inspired by the fact that particularly for SMEs project ventures are very important, perhaps even necessary, vehicles to achieve tasks too big or complex for them to complete alone because of a lack of expertise or diseconomies of small scale. At the same time, it helps SMEs to stay adaptive and competitive by avoiding rigid, long term resource commitments (Nooteboom, 1994). In fact, it has been recently found that on average one third of the total turnover of SMEs is project-based (Turner et al., 2009).

A second, more general reason concerns that SMEs are an under-represented category in large N quantitative research and sampling techniques (Schilling, 2009). This is the case despite the fact that most economic activity takes place not in large firms, but in SMEs. SMEs comprise 99.1% of the approximately 850,000 firms in the Netherlands, and they contain the majority (52.6%) of the total number of jobs (Statistics Netherlands). Moreover, SMEs account for a major part of the economy not only in the Netherlands, but in the rest of Europe (and the world) as well (Mulhern, 1995).

There are also several reasons why I targeted the Dutch market specifically. The Dutch economy is a very open economy, which means that it is highly dynamic and outside influences quickly reverberate throughout the economy (Hessels, 2007). Therefore, such open economies, like the Netherlands, are usually frontrunners in economic developments, which makes the Netherlands a very suitable research setting to be able to pick up on the kind of trends I wished to capture. Moreover, the most recent Community Innovation Survey (CIS) found that in terms of inter-organizational collaboration activity by innovative firms more generally, the Netherlands is highly representative of the European average. Therefore, by studying IOPVs in the Netherlands, I hoped to obtain an up-to-date and to some extent generalizable view of the trends that form the main focus of this dissertation. Chapters 3, 4 and 5 are based on these survey data collected with the help of *EIM.*

More specifically, chapters 3 and 4 are based on two waves of the *EIM Beleidsmonitor panel.* This concerns a panel of 2,000 SMEs that is contacted yearly by *EIM.* Panel attrition (panellists leaving the panel in between waves of data collection, for example because of organizations going bankrupt) is handled by filing up the sample to 2,000 every year, partly by contacting new firms. As this panel maintenance is one of *EIM*'s primary concerns, and the majority of the sample comprises a stable core of firms, response rates largely exceed those usually reached when surveys are sent out to random organizations. Through my contact with *EIM,* I could administer survey items in their panel in two waves, 2006 and 2009. In 2006, a total of 819 firms out of the total 2,000 participated in the survey, which constitutes a response of 41%. The means of data gathering in this survey was an internet survey. In order to increase the response rate in the second wave, the 2009 survey was undertaken by means of a telephone survey, which was conducted by trained interviewers of *EIM*. This modification was effective, as in this second wave a total of 1,987 organizations participated. This constitutes a response rate of 99%. The telephone survey included the exact same items that were posed in the internet survey in 2006, in order to make longitudinal comparisons possible.

Chapter 5 is partly based on a separate wave of data collection at the end of 2006. This study consisted of a telephone survey amongst 1,500 SMEs, and provided a separate opportunity to collect more specific data on IOPVs. Although this study had a somewhat smaller sample than the one just mentioned above, it was geared entirely to IOPVs, whereas the *Beleidsmonitor* panel data only provided quite limited space for IOPV related questions. In this specific study, I aimed for a large stratified sample, in which a

disproportionally large number of firms from sectors and size classes were sampled from which I assumed that the prevalence of IOPVs would be high. This included sectors such as the film and entertainment industry, construction, engineering and consultancy. In order to find other sectors with a relatively high density of IOPVs, the fieldwork was split into two waves of data collection. In the first wave, 500 telephone interviews were completed across all relevant sectors and size classes, with a particular focus on the aforementioned sectors. The results of this wave were subsequently used to determine the stratification strategy for a second wave of 1,000 completed interviews. In total, 6,064 enterprises were contacted in order to reach a total number of 1,500 completed interviews.

Chapter 5, however, also draws on a qualitative comparative case study. The reason hereof, lies in the following. The quantitative data analysis in chapter 5 consisted of a latent class clustering analysis of the above mentioned sample of 1,500 SMEs in order to empirically develop a broad taxonomy of different configurations of IOPVs. This was a necessary first step to try to start to systematically categorize the main IOPV contexts that exist empirically, reducing the number of theoretically possible configurations to those major ones that commonly occur in practice. In so doing, I believe I am among the first in this domain to try to use quantitative research to generalize from the many excellent qualitative studies that have been conducted on project-based learning. My research question, however, was also after the specific learning implications of IOPVs that emerge in each type of project. Because the nature of such mechanisms are quite subtle and sensitive to context (Prencipe & Tell, 2001), I decided to study these through an in-depth comparative case study of one case per cluster. The strategy entailed that on the basis of the quantitative data reported above (1500 SMEs that would identify 252 IOPVs), a limited number of cases were selected that very closely resembled each of the ideal type configurations of IOPVs. These cases, through their answers on the survey items and the completeness of the data they had provided, proved to be promising exemplars of each of the three configurations and were the closest to resemble the observed patterns in the data. Respondents of these cases were sent an information letter through the contact information that had been collected in the telephone survey, which asked them if they would be willing to participate in follow-up research. The majority of these cases (seven in total) were willing to cooperate, and for each of these cases an exploratory face-to-face interview was planned with the same respondent of the same SME that had been contacted in the telephone survey. From this initial interview, some cases appeared to be more willing to disclose information and have researchers do actual case study research than others. Based on the initial interview, the three most promising cases, one for each class of inter-firm projects, were selected. From the initial interviews with the original respondents of the phone interviews, I subsequently employed snowball sampling in order to find and interview additional respondents from the other organizations involved in the project, both respondents that were intimately tied to the project, as well as those that remained within the parent organizations through project operations.This fine-grained qualitative data was a strong

addition to the relatively broad, somewhat coarse-grained quantitative study, by providing rich case illustrations of IOPVs, and the degree and kind of learning that can be found in them.

In addition to this data, I mentioned that the final part of my research question alluded to a more micro understanding of IOPVs (namely: "[..] and what are their [IOPVs] learning implications for the people and organizations involved in them?"). This part of the research question demanded a more in-depth look at what happens *within* IOPVs, within the teams of individuals of which they consist. Partly, this part of the research question was tackled by the aforementioned qualitative case studies. In addition, however, I performed a controlled experiment with individuals enrolled at TiasNimbas Business School. Between September 2008 and December 2009, a total of 267 subjects (85 women) participated in this study. The design of the study entailed that the 267 subjects were assigned to 89 three-person teams, which were in turn randomly assigned to one of two experimental conditions in which the teams' time frame was manipulated (temporary teams with a limited time frame, versus open-ended teams with a more indeterminate time frame). I studied these two groups of project teams while working on a creative task. The findings from this experiment will be reported in chapter 6.

1.6 Structure of the Dissertation

In order to answer this study's research question, it was broken up in several sub-questions that each governs the core chapters of my dissertation. The following presents a brief overview of the different chapters, and how each relates to the overall research question.

In order to get a thorough understanding of the literature to which this dissertation aspires to contribute, **chapter 2** presents a systematic literature review. It takes a broad approach toward inter-organizational project ventures by subsuming them under the broader category of "temporary organizational forms", and systematically brings together, analyzes, and classifies the relevant literature. Among others, it presents four themes (time, task, team and embeddedness), that are identified as key themes in the literature. I discuss for each of these themes what has been done, what has not been done, and, what in my view, might be done to remedy the gaps in our current understanding of IOPVs.

Having established that IOPVs are part of a rapidly growing body of research, **chapter 3** turns from theory to practice: are IOPVs also an empirically "real" phenomenon? And what are their main empirical manifestations? Based on large scale data from a repeated trend survey amongst 2,000 SMEs in the Netherlands, this chapter builds on the four dimensions elaborated in chapter 1 (time, task, team, and embeddedness) in order to describe the prevalence and nature of IOPVs.

Whereas chapter 3 indicated that IOPVs are an important form of inter-firm collaboration, and a significant part of the economy more generally, **chapter 4** asks: why do organizations engage in this kind of collaboration? What are their antecedents? In other words, where do IOPVs come from? Based on survey data collected among 1,725 SMEs and longitudinal industry data, I find an overall pattern that indicates that IOPV participation is primarily determined by a focal SME's scope of innovative activities, and the munificence, dynamism and complexity of its environment. Unexpectedly, these variables have different effects on *whether* SMEs are likely to engage in IOPVs, compared to with *how many* there are in their portfolio at a time. The implications of these results for the literatures on project-based organization and alliance portfolios are discussed in the context of two conceptually challenging dimensions of IOPVs: them being temporary and multi-party entities.

Whereas Chapters 1 and 2 already demonstrated how there is considerable variation between different kinds of IOPVs, the implications of this variation have only rarely been studied. Based on a latent class cluster analysis of data collected among 1,500 SMEs in the Netherlands, **chapter 5** builds on this notion and the four themes of time, task, team, and embeddedness (chapter 1) in order to empirically develop a taxonomy of IOPVs, and develop theory on how the variation between different kinds IOPVs impacts project-based learning. The specific process of project-based learning and the mechanisms that triggered it were studied by a qualitative case study. This chapter answers whether IOPVs come in different kinds, and what implications this diversity has for organizational learning theories.

In **chapter 6**, the last part of the research question is tackled, with regard to the implications of being in a temporary team. In this experiment, I was particularly interested in how time frame affects team dynamics (time orientation, task immersion, processing of information) and outcomes (cohesion). My main findings indicate that that there are strong empirical grounds to assume that temporary organizational forms *are* different from open-ended forms of organization by virtue of their temporariness, as their limited time frame creates different dynamics within project teams. Specifically, I found differences with regard to time perspective, task immersion, and processing of information, and temporariness emerged as an important moderator of the relation between team conflict and team cohesion. These findings supplement the findings reported in the previous chapters by taking a radically different micro perspective toward the subject of study.

Chapter 7, finally, summarizes the main findings of the different chapters, and formulates an answer to the overall research question. It also discusses this study's broader implications for research and practice in the field of IOPVs.

Chapter 2

Taking Stock: A systematic Review of the Literature on Temporary Organizational Forms[2]

2.1 Introduction

Related to the increasing attention to time and temporality in management and organization science (Ancona et al., 2001; Mitchell & James, 2001), management scholars have in increasing numbers started viewing organizational entities such as inter-organizational project ventures (IOPVs) (Grabher, 2002a; Schwab & Miner, 2008), movie sets (Bechky, 2006; DeFillippi & Arthur, 1998) and task forces (Bigley & Roberts, 2001; Weick, 1993) as being "temporary organizational forms". Such forms of organization, deemed the "organizational equivalent of a one-night stand" (Meyerson et al., 1996, p. 167) and "hyper-efficient organizational form freed from any organizational slack" (Grabher 2004a, p. 1491) seem to be becoming increasingly prevalent in our globalized fast-paced economy (Ekstedt et al., 1999; March, 1995). After four decades of research on a great variety of temporary organizational forms (which have in common the fact that they are temporary, i.e. they are characterized by an ex ante defined limited period of time of interaction between members), it is time to take stock of what we know, and provide a roadmap for future enquiries.

The present chapter will, therefore, take a broad approach toward IOPVs by subsuming them under the broader category of "temporary organizational forms", and systematically bring together, analyze, and classify the relevant literature. As such, the review pertains to temporary organizational forms more broadly, of which IOPVs are but one example. Reviewing this literature is relevant, timely and necessary.

It is relevant because, although we know that temporary organizational forms, like IOPVs, are not new (Bechky, 2006), new organizational forms are often temporary (Malone & Laubacher, 1998). Moreover, whereas some industries have had a long tradition of organizing through temporary organizational structures, such as film making (DeFillippi & Arthur, 1998; Jones, 1996; Sorenson & Waguespack, 2006), theatre (Goodman & Goodman, 1972; 1976) and construction (Eccles, 1981; Gann & Salter,

[2] A slightly modified version of this chapter appeared as:
Bakker, R.M. (2010). Taking Stock of Temporary Organizational Forms: A Systematic Review and Research Agenda. *International Journal of Management Reviews,* 12(4): 466 – 486.

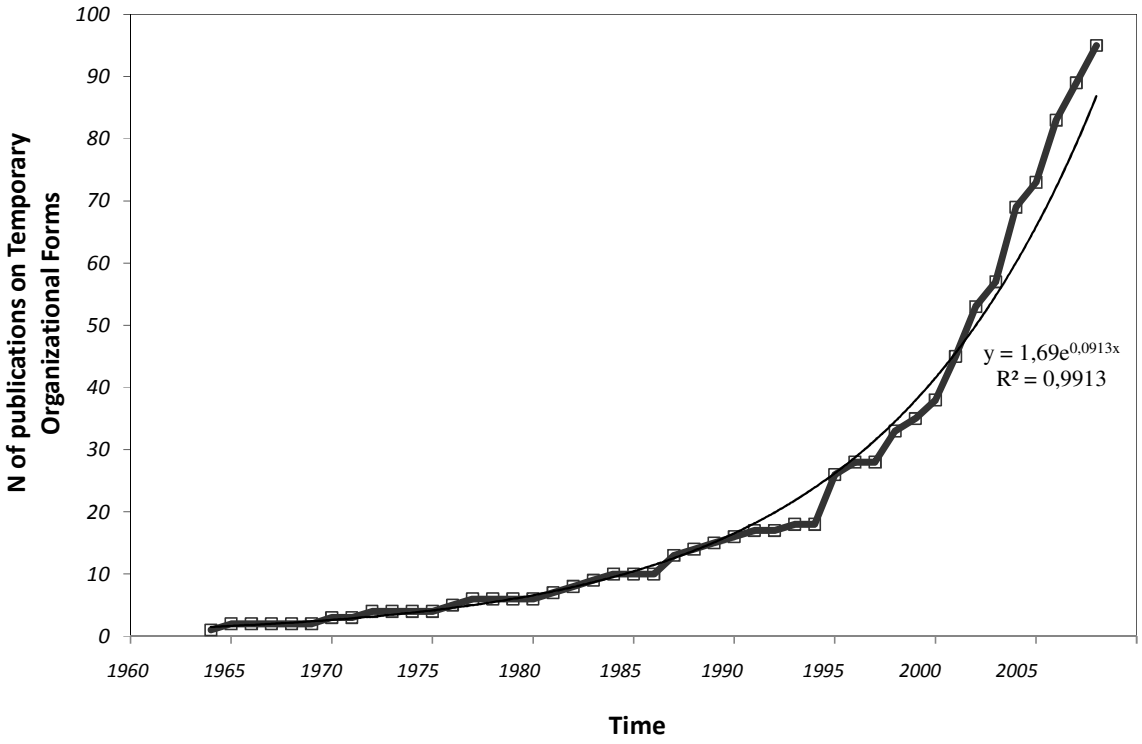
Previous versions of the present chapter were presented at the 2009 Academy of Management Annual Meeting (Chicago, August 2009) and at the 24th EGOS colloquium (Amsterdam, July 2008).

2000; Kadefors, 1995), a myriad of other industries are increasingly adopting this mode of operation, including software development, advertising, biotechnology, consulting, emergency response, fashion, television, and complex products and systems (DeFillippi, 2002; Grabher, 2004a; Hobday, 2000; Powell et al., 1996; Sydow & Staber, 2002; Uzzi, 1996; Weick, 1993). Also, contemporary industry trends such as 'patching' (Eisenhardt & Brown, 1999) and 'e-lancing' (Malone & Laubacher, 1998) are indicative of the widely shared notion that, across the board, economic action seems to be increasingly taking place in small, temporary systems of work organization, rather than large permanent organizations (Malone & Laubacher, 1998; March, 1995).

The present study also seems timely, as there was recently a spike in the number of scholarly works on temporary organizational forms being published, resulting in a body of research that is currently growing exponentially (see Figure 2.1). In fact, in the last decade (1998–2008), 61 works with an explicit focus on temporary organizational forms were published in books and ISI-indexed journals, against 18 the decade before (1988–1998), which constitutes an increase of 339% (see Figure 2.1). It seems, then, that it is time to take stock.

Third and finally, such an undertaking seems necessary, as the increase in research attention to temporary organizational forms has hardly been accompanied by integration efforts. This has contributed to a state of the field as consisting of many small and largely unconnected pockets of research. To illustrate this diversity, temporary organizational forms carry a number of different labels, such as ephemeral organizations (Lanzara, 1983), temporary teams (Saunders & Ahuja, 2006), transitory organizations (Palisi, 1970), short-term projects (Faulkner & Anderson, 1987) and disposable organizations (March, 1995), which relate to slightly different paradigms, perspectives and research questions. By placing their "temporariness" centrally, and by pointing out the commonalities and sources of variation between different types of temporary organizational forms, this chapter does not attempt to provide an exhaustive account of everything written on temporary organization. Instead, the aim is to give an integrated overview of the most important topics and debates in order to identify which directions future research might consider. The above is reflected in the following research question: What are the main topics and debates in the literature on temporary organizational forms, and how should future research proceed in expanding this important field of enquiry?

FIGURE 2.1.
Growth of Literature on Temporary Organizational Forms[3]



Before proceeding, some lines need to be drawn. First, even though a fairly rich tradition of work on temporary organizational forms exists, only since quite recently does the field seem to regard itself as a distinct category of interest (see Lundin & Söderholm, 1995). It should thus be acknowledged that, by grouping the literature around the temporary organizational form, this review cuts across some paradigms that have had a longer existence, such as, for instance, project management. Some excellent overviews of such different-but-related fields have already appeared: for example, with a focus on project management as a profession (Morris, 1994), a focus on the research on projects (Söderlund, 2004a) or with a focus on project-based organizations (PBOs) (Gann & Salter, 2000; Hobday, 1998, 2000; Whitley, 2006). In contrast to such reviews (and more in line with the work by Lundin & Söderholm (1995) and Packendorff (1995)), the present chapter is primarily interested in the organizational processes, behaviour and social interactions that occur in temporary organizational settings (of which projects are just one), and to analyze these from an organization science perspective. In this sense, the present literature review is at the same time broader than the above-mentioned works in terms of the organizational settings that are included, but narrower in its theoretical demarcation. This narrow demarcation is mainly manifested in the second important caveat that should be mentioned, namely the fact that, because the "temporariness" of organizational forms is the variable of interest here, this review and its systematic approach towards identifying relevant literature is

[3] The figure cumulatively plots 95 works that were identified as pertaining to temporary organizational forms (see 'Research approach') according to their year of publication from 1960 to 2008.

primarily targeted at those works that explicitly (rather than implicitly) study organizational systems which are of a temporary nature. Although this might seem obvious, this is an important element in this study's research approach, which will be elaborated shortly. First, however, the temporary organizational form is defined, and the background to the study illustrated.

2.2 Defining Temporary Organizational Forms

Temporary organizational forms, of which IOPVs are a prime example, probably date back to antiquity (Ekstedt et al., 1999; Packendorff, 1995). It took to 1964, however, for the first scholarly work that explicitly focused on "the temporary organizational system" as an object of academic interest to be published (Miles, 1964).[4] One year later, Bennis (1965, p. 34) claimed that "[t]he social structure of organizations of the future will have some unique characteristics. The key word will be "temporary"; there will be adaptive, rapidly changing temporary systems". After other ground-laying work in the years after (Palisi, 1970), temporary organizational forms were popularized in the 1970s by Goodman (1972) and Goodman & Goodman (1976), who were among the first to offer an organizational perspective towards the temporary organizational work system. In hindsight, it seems that more recently special issues by, among others, the *Scandinavian Journal of Management* (1995) and *Organization Studies* (2004) have been significant factors in popularizing the field further (see Figure 2.1). The former successfully re-positioned projects as temporary organizational forms (e.g. Lundin & Söderholm, 1995), and the latter emphasized the importance of the linkages between the temporary organizational form and its permanent environment (e.g. Grabher, 2004a; Sydow et al., 2004).

The focal unit of interest in the present study is the temporary organizational form itself, which can be defined as a set of organizational actors working together on a complex task over a limited period of time (see Goodman & Goodman, 1976;[5] Grabher, 2002a; Jones, 1996; Meyerson et al., 1996). Clearly, this definition spans a relatively broad number of organizational forms, such as R&D projects (Katz, 1982), theatre productions (Goodman & Goodman, 1972), film sets (DeFillippi & Arthur, 1998), emergency response teams (Weick, 1993), task forces (Saunders & Ahuja, 2006), construction projects (Scarbrough et al., 2004b) and sports event organizing committees (Løwendahl, 1995). What this definition *does not* pertain to, however, is temporary employment, as in a temporary system "everyone is temporary, along with the enterprise"(DeFillippi & Arthur 1998, p. 136), whereas temporary employment usually concerns individual temporary membership of an enduring system.

[4] See Miles (1977), on the origin of the concept.
[5] Please note that this adopted definition is slightly broader than Goodman & Goodman's (1976, p. 494) classic definition, which refers to "a set of diversely skilled people working together on a complex task over a limited period of time".

While the temporary organizational form is the focal unit of interest in this review, the work by Grabher (2002a,b, 2004a,b), in particular, has made a forceful claim that temporary organizational forms should be regarded "as inextricably interwoven with an organizational and social context which provides key resources of expertise, reputation, and legitimization" (Grabher, 2004a, p. 1492). Therefore, a review of this literature should not neglect their embeddedness in an enduring context. Generally speaking, this context consists of two levels, the firm level (i.e. the organization(s) in which the temporary system is to a more or lesser extent embedded) and the wider social context (including industry, epistemic community and enduring personal networks; see Engwall, 2003; Grabher, 2004a). In temporary organizational forms research, the former is often, but not always, a PBO (i.e. an organization in which the project is the most important unit for production organization; see Cacciatori, 2008; Hobday, 2000), and the latter a project-based industry, in which the primary mode of operation is project based, such as the production of films in the motion picture industry (Bechky, 2006; Jones, 1996). For the purpose of this study, where the temporary organizational form stands central, the most important feature of context regards the interaction between a temporary organizational system and its environment (Sydow et al., 2004). This focuses attention on the cross-level linkages between the temporary organizational form and its firm-level and wider social context, such as the relation between enduring role structures (context) for the co-ordination of tasks on film sets (see Bechky, 2006). This theoretical demarcation forms the basis for this chapter's methodological approach towards identifying potentially relevant research.

2.3 Research Approach

In order to arrive at a representative sample of works from the field of temporary organizational forms to ground the research, the literature search commenced with extracting a number of keywords from the labels and definitions that were mentioned in the previous section (see Table 2.1). These search terms limited the search to finding literature with an explicit interest in temporary organizational forms, rather than those which study an organizational entity which might be temporary, but where this variable does not play a part in the study's analyses and discussion. (Therefore, I did, for instance, search on the search term "temporary organization", but not on "movie set".) This strategy excluded a number of studies which take place in a temporary setting which is not recognized as being temporary. In other words, there are a large number of studies on teams, for instance, which arguably take place in a temporary setting, but where the fact that they are temporary is not considered or taken into account as important (see Packendorff, 1995). Such studies were not covered by the search terms.

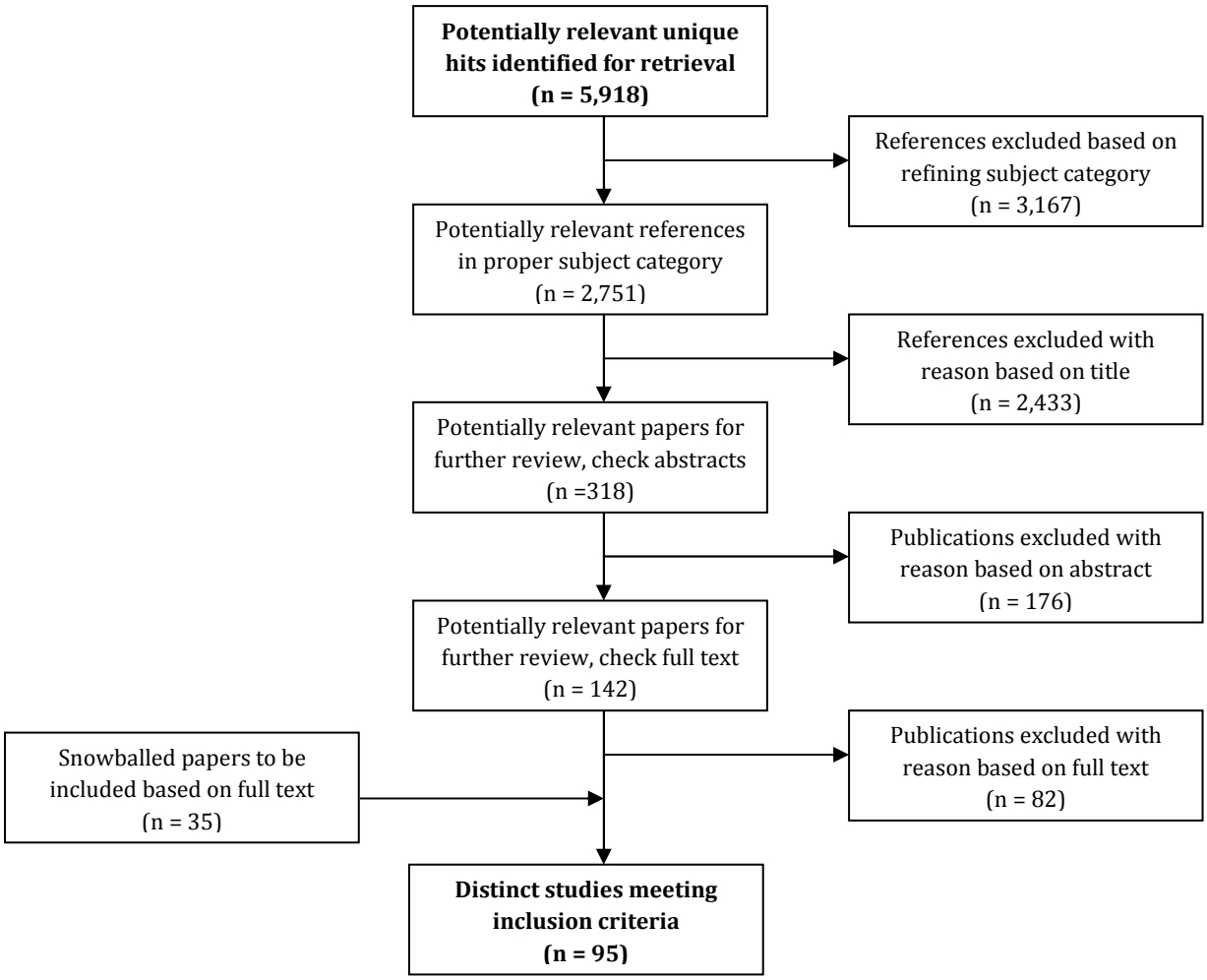
TABLE 2.1.
Search Terms

Category A	Category B
Temporary	*Organization / Organization*
Transient	*System*
Ephemeral	*Team*
Short-lived	*Group*
Transitory	*Firm*
Disposable	*Project*
	Structure
	Institution
Stand-alone search terms	
Project-based	*Project network*
Project ecology	

As can be seen from Table 2.1, the key words were divided into two categories. The search labels from category A were combined with the search labels from category B, which yielded 6 * 8 = 48 concrete search strings. In addition, a number of stand-alone search terms were applied, making a total of 51 concrete search terms. These search terms were then inserted into two search engines: ABI/Inform, and the Thomson ISI Web of Knowledge Social Sciences Division. This first step identified a total of 5,918 unique hits. This large number is not entirely surprising given the general nature of some of the search terms. It is not uncommon in literature reviews to have a large number of hits in a first round of searching (see Pittaway et al., 2004; Provan et al., 2007). In increasingly more fine-tuned stages of analysis, this number was systematically brought down. This process is depicted in Figure 2.2.

The literature selection process relied on a set of decision criteria. These criteria for including or excluding literature from this identified sample were the following. (1) Only studies were included where temporary organizational forms were studied in the adopted definition thereof, i.e. groups of organizational actors working together on a complex task temporarily. In line with earlier work, "temporarily" was understood here as an *ex ante* defined limited period of time of interaction between members (Grabher, 2002a; Jones & Lichtenstein, 2008; Sydow et al., 2004). (2) Only studies were included in the review where the temporary organizational form was the main unit of analysis. Although this criterion proved to be quite useful, it did pose some challenges with regard to studies on embeddedness in context – which, as just mentioned, are indispensable to our understanding of temporary organizational forms.

FIGURE 2.2
Flow Diagram of Literature Selection Process



Obviously, this context is, by itself, not temporary; a PBO, for instance, is "a durable organizational entity that uses projects to create its services and/or products", whereas temporary systems "coordinate activities only for the lifespan of the project" (Jones & Lichtenstein, 2008, p. 235). In this regard, works on the projectification of mass manufacturing industries that mostly pertain to this industry level were also excluded, as such work tends to focus more on macro-issues such as the division of labour in projectified industries, rather than the temporary organizational form itself. To be able to navigate this balance between including important works on context, while staying true to the unit of analysis of this research, this second criterion thus needed some qualification with regard to works on context. More specifically: (2a) works on the context of temporary organizational forms were included only when they studied context with explicit reference to the temporary organizational form, focusing, for instance, on their embeddedness. Finally, as a third criterion concerning papers: (3) only articles from ISI ranked journals were included, to ensure a minimum degree of quality of the material.

After this first phase in which works were deleted from the pool of 5,918, in a second step a backward and forward snowballing method was applied on the reference lists of the articles found (see Figure 2.2). This was done because the analysis revealed that some of the most important work in the field, which on no account could be ignored in a review of the literature because of the rigidity of its method, had appeared either in book chapters (e.g. Meyerson et al., 1996) or before the database's first year of inclusion (e.g. Bennis, 1965) or were missed for some other, sometimes undetectable, reason. This snowballing procedure, in line with the overall strategy in selecting and analyzing literature, relied on a thorough reading and understanding of the potential works to be included, rather than on a (necessarily arbitrarily defined) cutoff value for inclusion. The works added by snowballing were included in the sample (see Figure 2.2). In all, the total sample of papers included in the literature review numbered 95 works. Despite the likelihood that some potentially relevant literature has been missed in the process, it is the author's belief that the final list of papers is largely representative of the work on temporary organizational forms in its current shape. These 95 works form the data on which the claims in this chapter are based.[6]

A final step in the research approach pertained to an initial structuring of the 95 identified works around an integrative framework. More specifically, after a close reading of the sample the following approach was taken.

First, I decided to deconstruct Goodman & Goodman's (1976) classic definition of temporary organizational forms into a sensitizing concept (e.g. Blumer, 1954), and then to compare it with an influential more recent conceptualization of temporary organization (Lundin & Söderholm, 1995), in order to find central themes that these conceptualizations have in common. By deconstructing Goodman & Goodman's (1976, p. 494) definition, four broad themes were found: skills ("a set of diversely skilled people"), interaction ("working together"), task ("on a complex task") and time ("over a limited period of time"). When compared with Lundin & Söderholm's (1995) subsequent list of concepts – time, task, team and transition – these concepts displayed a large overlap (which was interpreted as indicating some degree of reliability). Second, after considering the elaborations of each of these themes by the respective authors, and to come to a parsimonious overview, it was decided to merge the "skills" and "interaction" part of the Goodman & Goodman definition into one broad "team" concept, as in Lundin & Söderholm's classification, as both skills and interaction fit intuitively under this umbrella. As Lundin & Söderholm mention one extra element that Goodman & Goodman did not – transition – this was added as a dimension.

Taking an initial classification as a sensitizing concept, however, meant that it was open to modification if the data so demand (see Blumer, 1954). Indeed, later in the process the decision to add transition to the framework was reversed, because there was relatively little literature that could be matched with Lundin & Söderholm's (1995, pp. 442–444) description of this concept. Instead, in line with the previous discussion on

[6] These are marked in the reference list by an asterisk

the importance of the enduring environment of temporary organizational forms, the theme "embeddedness" was added. Thus, the themes adopted to structure and analyze the literature were time, team, task and embeddedness. After closely re-reading all the material and drawing up abstracts for each of the 95 works in the sample (covering general information such as the object of study, the applied methodology and research setting, and impact in terms of citations, together with in what manner each study dealt with one, or several, of the sensitizing concepts of time, team, task, and embeddedness), the author was able to identify within each theme the key questions and debates in the current literature. These findings will be presented in the following sections.

2.4 The Temporary Organizational Forms Literature 1964–2008: Overview, Gaps and Future Research Directions

The research approach just described led to the integrated overview of the research on temporary organizational forms, from the first publication on the subject (Miles, 1964) to the present state of the literature. The following discussion is structured as follows. It is organized around the concepts time, team, task and embeddedness. Within each of these themes, the review revolves around the key questions posed, rather than a meticulous account of the findings (see Table 2.2 for an overview). For each theme, an overview of the literature (describing briefly what has been done), the gaps in the literature (describing what has not been done) and future research directions (describing what, in the author's view, should be done) are subsequently presented. To foreshadow a recurring theme in these future directions, particular attention is also paid to how each of the themes can be viewed as a theoretically important dimension of variation between different types of temporary organizational forms. This choice reflects the concern that, although all temporary organizational systems hold the important commonality that they are temporary, there is considerable variation in the types of temporary organizational forms that have been studied in the current body of research, whether they be construction projects, movie sets, emergency response groups or project teams. In fact, I would propose that as important as it is for this field to clearly acknowledge its "temporariness" as a distinguishing characteristic from other domains and forms, it also needs to deal with its inherent diversity in a systematic way. Therefore, apart from describing what has been done, which gaps there are in the literature, and how future research could tackle these gaps, this chapter elaborates on how future research can view each of the themes as theoretically relevant dimension of variation.

TABLE 2.2

Frequencies of Themes and Methodologies by Time Period*

Themes	*Key Questions Posed by Extant Research*	**Period 1 1964-1980 Incubation (N = 6)**	**Period 2 1981-1994 Incremental Growth (N = 12)**	**Period 3 1995-2008 Exponential Growth (N = 77)**	**Total 1964-2008 (N = 95)**
Time	*1. What is the effect of time limits on processes, functioning, behaviour and performance?*	2	4	4	**10**
	2. How do temporary organizational forms develop over time?	0	3	11	**14**
	3. How should time itself be envisioned in a temporary organizational setting?	0	0	3	**3**
Team	*1. How do groups of people in temporary organizational systems resolve issues of vulnerability, uncertainty and risk?*	1	3	8	**12**
	2. How is face-to-face interaction shaped in a temporary team environment?	1	3	6	**10**
	3. How are temporary teams managed?	4	4	10	**18**
Task					
	1. What kind of tasks do temporary organizational forms perform?	1	1	10	**12**
	2. What are the effects of temporary organizational forms having a limited task?	1	0	8	**9**
	3. How do temporary organizational forms execute tasks most effectively?	1	1	8	**10**
Embeddedness					
Firm	*1. How is knowledge that is created in a temporary organizational form sustained in an enduring firm?*	0	0	21	**21**
	2. How can firms manage innovations through temporary organizational ventures?	0	0	8	**8**
Wider social context	*3. What is the impact of embeddedness in the wider exterior context on interior processes of temporary organizational forms?*	0	2	20	**22**
	4. What form do careers take that are made up of subsequent temporary team memberships?	1	2	5	**8**

Methodology (for empirical works only)

	Cross-sectional	*Life-cycle***	*Longitudinal****	**Total**
Conceptual	n.a.	n.a.	n.a.	**23**
Small N sample	4	36	16	**56**
Large N sample	6	4	6	**16**
Total***	**10**	**40**	**22**	**95**

*Values represent the number of articles in sample. Some articles deal with more than one theme and question. Time periods were chosen to be roughly of equal length, yet being distinct episodes in the evolution of the research field.
** One temporary system cycle is studied over time
*** Multiple temporary system cycles are studied over time.
**** These sum to 95 when conceptual papers are added.

2.4.1 Theme 1: Time

Time, the first theme identified in this review, is regarded as being the most salient dimension of temporary organizational forms (Grabher, 2002a; Jones & Lichtenstein, 2008). In temporary organizational forms, time has been variously proposed to be short (Lanzara, 1983) and/or limited (Grabher, 2004a), but at the very least different (Miles, 1964) from how it is conceived of in other organizational forms. Table 2.3 summarizes this theme.

TABLE 2.3
The Time Theme in Temporary Systems Research

Key Questions	Summary
1. What is the effect of time limits on processes, functioning, behaviour and performance?	(Anticipated) time limits of temporary organizational forms affect issues such as *time use* by individual members, *communication*, *norms*, and *role definition* (Miles 1964), *leadership* (Bryman, Besnen, Beardsworth, Ford and Keil 1987b), democratic rather than authoritarian *decision making* and *organization structure* (Palisi 1970), and the kind of *coordination techniques* that are used to manage uncertainty (Jones and Lichtenstein 2008) On the basis of attentional focus models and shadow of the future models, temporary teams have been proposed to be different from ongoing teams because members do not anticipate future interaction with each other beyond the imminent deadline. Therefore, they are not concerned with long-term efficiency of the processes (Saunders and Ahuja 2006).This implies a shift toward *task-focus*. On the other hand, there has been work on the importance of *interpersonal relations* (e.g. Miles 1964; Palisi 1970) because these can endure beyond the temporary organizational form (e.g. Bechky 2006; Engwall 2003; Grabher 2002a, 2004a)
2. How do temporary organizational forms develop over time?	Sequential models of group development, such as *project life cycle models*, and non-sequential group development models, such as *punctuated equilibrium* (e.g. Engwall and Westling 2004; Gersick 1988; 1989; Katz 1982; Lundin and Söderholm 1995; Packendorff 1995)
3. How should time itself be envisioned in a temporary organizational setting?	In temporary systems, time should be envisioned as *linear*, whereas in enduring organizations, rather a *cyclical* time conception is applied (Ibert 2004; Lundin and Söderholm 1995) Strategy of the *future perfect* (Pitsis *et al*. 2003)

Overview of the literature

As temporary systems are most prominently characterized by their time limits (e.g. Jones & Lichtenstein, 2008), a key question scholars have first asked is: What is the effect of time limits on processes, functioning, behaviour and performance? (studied by N = 10 works). These concern, for instance, issues such as time use by participants, communication, norms, role definition, leadership, decision-making, organization structure, co-ordination techniques and focus (e.g. Bryman et al., 1987a; Jones & Lichtenstein, 2008; Miles, 1964; Palisi, 1970; Saunders & Ahuja, 2006). There seems to

be agreement that, in general, issues such as leadership (Bryman et al., 1987b) and group interaction (Saunders & Ahuja, 2006) in temporary organizational forms would favour a task focus over a relationship focus. It should be noted, however, that most of this work is conceptual and, moreover, has set forth some conflicting propositions (see Table 2.3).

A second question which has been posed concerns: How do temporary organizational forms develop over time? (N = 14). Authors such as Gersick (1988, 1989), Katz (1982) and Engwall & Westling (2004), for instance, focused on models of group development. Here, two broad stances can be distinguished. On the one hand, there is work on sequential group development models that resemble the project life cycle model (see Lundin & Söderholm, 1995; Packendorff, 1995), which assumes that groups generally go through the same set of predefined stages. On the other hand, non-sequential group development models such as the punctuated equilibrium model have been observed in temporary project teams (Engwall & Westling, 2004; Gersick, 1988, 1989), which draws attention to moments of sudden change (Engwall & Westling, 2004) in the form of midpoint transitions (Gersick, 1988, 1989) halfway through the life of a temporary system. In the latter model, mechanisms of change of the temporary organizational form over time stand central.

The third question that the existing literature, albeit in smaller numbers, has aimed to answer with regard to the time theme concerns: How should time itself be envisioned in a temporary organizational form? (N = 3). Ibert (2004, p. 1530), for instance, claimed that "[t]he main difference between a temporary project venture and a firm is their conceptions of time. For a firm a cyclical time conception is applied, whereas the project follows a linear time conception." A similar viewpoint underlies Lundin & Söderholm's (1995) discussion of the subject, which covers linear, cyclical and spiral conceptions of time. Lundin and Söderholm similarly come to the conclusion that in temporary organizational forms, "time is used ... in a linear form, to lead the way from a starting-point to termination" by virtue of being able to foresee a "linear foreseeable sequence" (p. 440). Lundin & Söderholm (1995) make the case that such a conception of time as linear implies that, because it is continuously fleeting, time is treated as scarce and valuable (cf. Pitsis et al., 2003) (see Table 2.3).

Gaps and future research directions

The most important gap in the time theme concerns our knowledge of the effects of "temporariness" (key question 1). It seems that the fact that temporary organizational forms are time-delimited has an effect on processes and outcomes, and the behaviour of their members (Bryman et al., 1987a; Jones & Lichtenstein, 2008; Saunders & Ahuja, 2006). However, of the ten studies which focus on this question, eight are conceptual. By combining this work, this review indicates that open empirical questions concern, for instance, "Are temporary groups relatively more concerned with the task, and less with relationship building than permanent groups, because they have a limited shadow

of the future?" (Saunders and Ahuja 2006). Moreover, how does this translate into group dynamics such as team cohesiveness, psychological safety and conflict? If groups of people in temporary organizational forms are less relationship oriented, how does this relate to performance (i.e. is it necessary for temporary teams at all to develop relationship oriented phenomena such as team identity and a positive group climate, when all they need to do is accomplish a short-term task?)? Do temporary groups process information differently, for instance heuristically rather than systematically, because of limited duration (cf. Meyerson et al., 1996)? Under which conditions is leadership in temporary organizational systems mostly concerned with task-related issues (Bryman et al., 1987b), and under which conditions does it focus more on social relations (Miles, 1964)? How do the degree and pattern of co-operation evolve in temporary organizational forms, and how is this influenced by the approaching deadline (Ness & Haugland, 2005)? Such propositions could be aptly tested in controlled studies (such as experiments) in order to determine causality and control clearly for other confounding factors. Field research, however, is also necessary, in order to determine how the embeddedness of social actors in an enduring and overlapping context moderates these effects. Such research could have broad implications, as we still know relatively little of the effects of time (limits) on a plethora of organizational processes more generally (see, for instance, Ancona et al., 2001; Mitchell & James, 2001).

A second gap in the time theme pertains to the second key question covered in extant research: How do temporary organizational forms develop over time? As mentioned earlier, this stream of research has been concerned mostly with the project life-cycle model (Packendorff, 1995) and punctuated equilibrium (Gersick, 1988, 1989). There are many alternative models of group development, however (e.g. recurring-cycle, social entrainment and adaptive structuration; see for instance Chidambaram & Bostrom (1996)), and they could be incorporated in temporary organizational forms research in order to gain a richer perspective on how temporary organizational forms develop over time. This applies both within the lifetime of a single temporary system and over succeeding temporary ventures. A key challenge herein is to study whether these group evolution mechanisms differ between different types of temporary organizational forms.

Time can also aptly be seen as an important source of variation between different types of temporary organizational forms, by distinguishing between those of short versus long duration. More specifically, although it seems that the limited duration of temporary organizational forms is often interpreted as necessarily implying short duration (e.g. Porsander, 2000), this need not be the case (e.g. Shenhar, 2001b). Authors such as Engwall & Westling (2004) studied temporary organizational systems with a duration of 5 years, and Shenhar (2001b) those with a duration of up to 12 years. Although the lifespan of the latter systems is limited in time (by a deadline some 5–12 years in the future), many would feel a duration of 5 years or longer does not qualify as "short" (see Sydow et al., 2004). There seems to be a debate in the literature on whether systems of relatively longer duration (although still limited by a deadline in a distant

future) should be called “temporary”. The dominant view suggests they should (e.g. Engwall & Westling, 2004; Grabher, 2002a; Jones & Lichtenstein, 2008). Therefore, the duration of temporary organizational forms is something which can vary, and it probably has important implications. Areas which are likely affected by the duration of temporary organizational forms are, for instance, trust and social interaction. More specifically, when temporary organizational forms are extremely short in duration, there is not enough time to develop processes such as personal relations (Morley & Silver, 1977), regular trust (Meyerson et al., 1996) or a shared task-relevant knowledge base (Lindkvist, 2005) within the temporary organizational form. Therefore, there are other mechanisms at play, such as swift trust (Meyerson et al., 1996). Temporary systems of relatively longer duration are, in contrast, more likely to develop processes more similar to those found in non-temporary work organization (Sydow et al., 2004). As such, explicitly and systematically distinguishing between temporary organizational forms of short and long duration is an important direction for future research to consider.

2.4.2 Theme 2: Team

The second theme in the literature on temporary organizational forms, team, relates to the fact that temporary organizational forms in the adopted definition thereof are systems that include interdependent sets of people working together (Goodman & Goodman, 1976). In fact, the team seems to constitute the temporary organizational form to a large extent empirically (Lundin & Söderholm, 1995), and studies considering team aspects of temporary organizational forms usually take the group (i.e. a collective of individual people, rather than organizational entities) as the unit of analysis (e.g. Saunders & Ahuja, 2006). Considering Goodman & Goodman’s (1976) and Lundin & Söderholm’s (1995) work, the team dimension of temporary systems relates to issues such as skills, human resources and interdependence. Table 2.4 summarizes this theme.

TABLE 2.4
The Team Theme in Temporary Systems Research

Key Questions	Summary
1. How do groups of people in temporary organizational systems resolve issues of vulnerability, uncertainty and risk?	Issues of vulnerability, uncertainty and risk are resolved through *swift trust* rather than the regular trust found in enduring organizations (Meyerson et al. 1996; Saunders and Ahuja 2006; Xu *et al*. 2007) *Social, temporal and structural embeddedness* in an enduring context resolves issues of coordination and uncertainty by providing (social) structure and institutional safeguards (Eccles 1981; Jones and Lichtenstein 2008; Sydow and Staber 2002)
2. How is face-to-face interaction shaped in a temporary team environment?	Face-to-face interaction in temporary teams is to a large extent structured by *role-related behaviour*, the specifics of which are only negotiated in situ (Baker and Faulkner 1991; Bechky 2006; Weick 1993), for instance, by role-based joking (Bechky 2006; Terrion and Ashforth 2002) *Communication* in temporary organizational systems is important to coordinate tasks. Its content relatively more focused on task related issues than on inter-personal issues (because time limits narrow attention to the task, Saunders and Ahuja 2006) and its amount tends to decrease is a function of increasing group longevity (Katz 1982). Communication should adhere to norms of respectful interaction (Miles 1964;Weick 1993)
3. How are temporary teams managed?	*Leadership* is mostly concerned with "soft" aspects like interpersonal liking, fostering an *espirt de corps*, and democratic participation (Bennis 1965; Miles 1964; Morley and Silver 1977; Palisi 1970) or, conversely, more with "hard" aspects like task focus because leaders face severe sanctions for time or budget slippage (Bryman, Bresnen, Beardsworth, Ford and Keil 1987a; Bryman, Bresnen, Ford, Beardsworth and Keil 1987b) *Team design* is crucial in teams of cycling and re-cycling members (Morley and Silver 1977; Perretti and Negro 2006) *Management interventions* benefit group performance, but only for high ability project teams (Kernaghan and Cooke 1990)

Overview of the literature

Concerning the team in temporary organizational forms research, a number of key questions have been dealt with in the current body of literature. First, since it has been established that in temporary systems groups of people often operate under constraints of high uncertainty and interdependence (e.g. Jones & Lichtenstein, 2008; Lanzara, 1983; Morley & Silver, 1977) researchers have asked how temporary teams resolve issues of vulnerability, uncertainty and risk (N = 12). As Meyerson et al. (1996) suggest, this is a crucial issue for teams in temporary organizational systems, since temporary organizational forms depend on interdependent sets of diverse skills and knowledge sets, yet they lack the time to engage the usual forms of confidence building found in enduring organizations. How teams of people then cope with such circumstances, and how their membership in enduring institutions influences issues of uncertainty has inspired a considerable body of research (e.g. Jones & Lichtenstein, 2008; Meyerson et al., 1996; Saunders & Ahuja, 2006; Sydow & Staber, 2002; Xu et al., 2007) (see Table 2.4). Arguably the most influential theory to come out of this work is Meyerson et al.'s (1996) theory of "swift trust", which proposes that, in temporary organizational systems,

groups work on a different kind of trust, which swiftly emerges presumptively, rather than slowly over gradual experiences (p. 170).

A second, and related, important question within this theme concerns: How is face-to-face interaction shaped in a temporary team environment? (N = 10). Goodman & Goodman (1976, p. 495) already claimed that one of the challenges that temporary organizational forms face is that, owing to the complexity of their task, and the limited time in which to execute it, "members must keep interrelating with one another in trying to arrive at viable solutions". Some research in this regard has focused on the behaviour of participants in temporary teams (such as Bechky, 2006; Terrion & Ashforth, 2002), while others on (the level of) communication between them (e.g. Katz, 1982; Miles, 1964; Weick, 1993), and yet others studied the content of their messages (Saunders & Ahuja, 2006). One interesting finding in this regard concerns that face-to-face interaction in temporary teams seems to be to a large extent structured by role structures which endure beyond single temporary team memberships (Baker & Faulkner, 1991; Bechky, 2006; Weick, 1993) (see Table 2.4).

A third and final often studied question posed in temporary organizational forms research in the team theme concerns: How are temporary teams managed? (N = 18). This stems from the suggestion that temporary organizational systems pose distinct challenges to leadership (e.g. Bryman et al., 1987b), while effective leadership at the same time is crucial to their success (e.g. Weick, 1993). Whereas some studies in this regard have focused on leadership itself (e.g. Bryman et al., 1987a,b; Miles, 1964; Morley & Silver, 1977), which has led to a relationship-oriented stance and a task-oriented stance (e.g. Bryman et al., 1987a), others have focused on issues such as team design (e.g. Perretti & Negro, 2006) and the effectiveness of management interventions (Kernaghan & Cooke, 1990). An interesting finding in the latter category is that management interventions seem to benefit temporary team performance, but only for high ability project teams (Kernaghan & Cooke, 1990) (see Table 2.4).

Gaps and future research directions

An important gap in the literature within the team theme pertains to the first and second key question equally, as we know relatively little of how interaction is shaped and how temporary groups resolve issues of vulnerability and risk. In particular, it seems that there are at least two viewpoints here, which relate to the antecedents of swift trust (Meyerson et al., 1996) and how this relates to the social embeddedness of actors in enduring, and sometimes overlapping networks of relations (Jones & Lichtenstein, 2008). Bechky (2006, p. 4) arguably most forcefully claimed that "the portrayal of temporary organizations as ephemeral, unstable systems that require swift trust is inaccurate: In fact, these organizations are organized around enduring, structured role systems whose nuances are negotiated in situ." Similarly, Eccles (1981) proposed that temporary organizational forms in the construction industry are structured as "quasifirms" by stable and recurring relations between the general

contractor and a small pool of subcontractors, and Clegg & Courpasson (2004) argued that projects retain elements of hierarchical control, albeit in a remote form rather than direct. Context is hereby introduced in team co-ordination, and shown to be inseparable from it. Jones & Lichtenstein (2008) take a similar, yet different, position in claiming that swift trust or embeddedness in enduring role or relational structures is not a matter of either/or, but rather that swift trust itself evolves out of social structure and enduring processes. In fact, Jones & Lichtenstein (2008, p. 249) propose that "swift trust is possible only because transactional uncertainty has been reduced through shared understandings that clarify knowledge content, roles, and role behaviours needed for effective coordination". As such, swift trust might be less related to interpersonal attraction, but rather resembles institutional trust, embedded in the collective experience of the industry and therefore not created "swiftly" on the spot (Jones & Lichtenstein, 2008).

Relating to the recurring future direction of systematically studying variation between different types of temporary organizational forms, it seems that one important factor that has been overlooked thus far in this discussion concerns the variation between the types of temporary organizational forms that are envisioned in Meyerson et al.'s (1996) theory of swift trust, and the movie sets studied by Bechky (2006) or the construction projects studied by Eccles (1981). Whereas Meyerson and colleagues, borrowing from Goodman & Goodman (1976), define temporary systems as consisting of teams of people "who have never worked together before and who do not expect to work together again" (Meyerson et al. 1996, p. 168), on Bechky's film sets, for instance, "crew members have high expectations of interacting with some of the same people on future projects" (Bechky, 2006, p. 15). In the latter circumstances, Bechky (2006) demonstrated the interplay between structure and the negotiated enactment of roles for shaping interaction in temporary teams. Therefore, I would suggest that, with regard to this gap, future research could push further in identifying the conditions under which interaction and co-ordination in temporary organizational groups are principally emergent and swift (if at all) and when they are rather structurally bound. A crucial variable to consider in this regard is thus whether participants have a realistic expectation of future collaboration by being embedded in overlapping networks or industries.

A distinction should also be made between co-located and geographically distributed temporary teams (Kavanagh & Kelly, 2002). Co-located teams have been claimed to be more prevalent, as it has been proposed that temporary organizational forms often, but not at all necessarily, collaborate within densely knit clusters with high spatial proximity (Grabher, 2002a). In general, this dimension will probably have strong implications with regard to interaction and knowledge transfer as, despite technological advances, spatial proximity still seems to be important for social interaction and knowledge transfer in temporary organizational systems (Breu & Hemingway, 2004; Kavanagh & Kelly, 2002; Sapsed et al., 2005). There are several arguments why co-location of temporary organizational system members can have beneficial effects on

learning, including the possibility of rapid and 'rich' face-to-face interaction, access to local communities of practice, and developing a common context of understanding (Grabher, 2002a; Kavanagh & Kelly, 2002). In sum, then, besides being an important theme in the literature, team is also an important dimension of variation.

2.4.3 Theme 3: Task

The third central theme in research on temporary organizational forms concerns the task that they execute. It is claimed that task definitions are the *raison d'être* for a temporary system (Lundin & Söderholm, 1995), as in most instances "the creation of a temporary organization is motivated by a task that must be accomplished" (Lundin & Söderholm, 1995, p. 441). Table 2.5 provides an overview of this theme.

Overview of the literature

It seems that, within the task theme, extant research has mainly studied three major questions. The first of these focuses on: *What kind of tasks do temporary organizational forms perform?* (N = 12). Existing work has pointed out the diversity in the tasks that temporary organizational forms undertake, ranging from shooting a film (Bechky, 2006) to organizing big events (Pipan & Porsander, 2000), and from tending to emergencies (Bigley & Roberts, 2001) to constructing buildings (Kadefors, 1995). Almost always there is a certain degree of complexity involved in this task (Meyerson et al., 1996). Moreover, the tasks of temporary organizational forms are often characterized as being finite, i.e. as having a deadline (e.g. Meyerson et al., 1996) (Table 2.5).

Secondly, because having a limited task is one of the crucial features of temporary organizational systems, extant research has studied: *What are the effects of temporary organizational forms having a limited task?* (N = 9). It has been proposed in this regard that one of the most significant consequences of the finite task which temporary systems undertake is the fact that "knowledge that is accumulated in the course of a project is at risk of being dispersed as soon as the project team is dissolved and members are assigned to a different task" (Grabher, 2004a, p. 1492), which relates to the problem of knowledge transfer and learning in temporary organizational forms. Temporary systems' clear task and finite nature thereof have also been associated with a radical task-orientation (Grabher, 2004a, p. 1491), and a focus on action rather than decision-making (Lundin & Söderholm, 1995).

TABLE 2.5
The Task Theme in Temporary Systems Research

Key Questions	Summary
1. What kind of tasks do temporary organizational forms perform?	Many, from shooting a film to organizing big events, to tending to emergencies to constructing buildings (e.g. Bechky 2006; Bigley and Roberts 2001; Kadefors 1995; Pipan and Porsander 1999) Tasks are *complex*. Complexity can vary between routine and one-off type of tasks and as a function of the nature of the work and the technological uncertainty surrounding its execution (Brady and Davies 2004; Løwendahl 1995; Meyerson *et al*. 1996; Shenhar 2001a) Tasks are *finite*. Temporary organizational forms are characterized by one, or a very limited number of tasks (e.g. Lundin and Söderholm, 1995; Whitley 2006). When the task is completed, the temporary system disbands (e.g. Baker and Faulkner 1991; DeFillippi 2002; Sorenson and Waguespack 2006).
2. What are the effects of temporary organizational forms having a limited task?	Because tasks of temporary organizational forms are limited, they run of the risk of *knowledge dispersing* when the task is finished and the temporary system dissolves (Grabher 2002a; 2004a; Ibert 2004; Scarbrough *et al*. 2004; Sydow *et al*. 2004) Having a clearly delimited short-term task without a shadow of the future can lead to a *task-orientation*, at the expense of attention to interpersonal relations (Grabher 2004a; Miles 1964; Saunders and Ahuja 2006) and to a focus on *action* rather than decision making (Ekstedt *et al*. 1999; Lundin and Söderholm 1995)
3. How do temporary organizational forms execute tasks most effectively?	Presence of *invisible social infrastructures* (like role systems) facilitates task execution (Brady and Davies 2004; Van Fenema and Räisänen 2005; Weick 1993) Being *isolated* during the task execution phase limits disturbances to task completion (Lundin and Söderholm 1995; Miles 1964). Temporary organizational forms are *task focused,* which holds a promise of hyper-efficient organizational form, but this will more likely benefit effectiveness than efficiency (Grabher 2004a; Saunders and Ahuja 2006) *Improvising* is an important way for temporary systems to coordinate non-routine tasks (Bigley and Roberts 2001; Weick 1993)

A third important question in this theme concerns: *How do temporary organizational forms execute their task most effectively?* (N = 10). Here, research has, for instance, focused on the presence of certain context variables (such as a social infrastructure) that render temporary systems more task-effective (Bechky, 2006; Brady & Davies, 2004; Van Fenema & Räisänen, 2005; Weick, 1993). Others have pointed to how the task-needs of temporary organizational forms differ over the life cycle of the temporary venture (Lundin & Söderholm, 1995) and yet others (e.g. Saunders & Ahuja, 2006; Weick, 1993) to how temporary organizational systems particularly deal with tasks differently from other organizational forms (see Table 2.5).

Gaps and future research directions

With regard to the task theme, it seems that there is room in the current body of literature for a more fine-grained perspective on the tasks that temporary organizational forms solve, and the variation associated with that. Most obviously, one should distinguish between unique tasks and routine tasks. Some authors, such as Goodman & Goodman (1976), have proposed that the tasks of a temporary organizational systems are "almost unique" (p. 495). This is a position that is found in the literature more often, as many (e.g. Gann & Salter, 2000; Lindkvist et al., 1998; Meyerson et al., 1996) have also referred to the one-off and exceptional tasks that temporary organizational systems often execute. Such unique tasks supposedly create ideal circumstances for developing creativity and change (Miles, 1964), but leave relatively little room for learning (Ibert, 2004) or the development of routines (Meyerson et al., 1996). Recently, the view of temporary organizational systems as systems dealing solely with unique tasks has been suggested to be problematic as, in the words of Brady & Davies (2004, p. 1605), "it equates project-based activities with non-routine behaviour", whereas often "firms undertake "similar" categories of projects ... involving repeatable and predictable patterns of activities". When tasks are more routine, this is generally conducive to learning, as this lowers learning boundaries (Scarbrough et al., 2004b). As Lundin & Söderholm (1995, p. 441) mention, "[w]hen a temporary organization is assigned a repetitive task, the actors know what to do, and why and by whom it should be done". Moreover, when temporary systems are repetitive in kind, so-called project capabilities (Brady & Davies 2004) can be developed, which concern knowledge and instructions about how to set up and execute repetitive temporary projects.

Besides "just" distinguishing between unique and routine tasks, there also seems to be a gap in the current body of literature with regard to how task uniqueness and task complexity have been conceptualized. Specifically, when variation is acknowledged at all, both tend to be regarded as dichotomous (simple vs. complex, unique vs. repetitive), whereas it seems that these are more likely variables that can take on many intermediate degrees, pertaining to different elements of the task. In particular, the rich work on organizational routines, spearheaded by authors such as March & Olsen (1989) and Feldman (2000), could enrich this current perspective. The former, among others, demonstrated that even tasks regarded as highly unique can have routine elements. One often cited example concerns the Norwegian oil fields. Lacking any experience with oil, the Norwegians drew on their knowledge of shipping as a source of routines, regarding an oil rig as "a somewhat peculiar ship" (March & Olsen 1989, p. 36). As such, routines were borrowed from a different context, making their task partly less unique (Feldman 2000). The perspectives developed in this literature should inform future studies on temporary organizational forms in order to deconstruct the tasks that temporary systems undertake into discrete elements of more or less complexity and uniqueness. Such analyses, then, could in turn enrich our current theories with respect to, for

instance, project-based learning (Cacciatori, 2008; Prencipe & Tell, 2001; Scarbrough et al., 2004a,b), and economies of repetition (Brady & Davies, 2004).

2.4.4 Theme 4: Embeddedness

The fourth and final theme distinguished in the literature on temporary organizational forms concerns embeddedness. With this theme, authors focus on the linkages between and embeddedness of the temporary organizational venture in its enduring environment. Whereas much of the early work employed a "lonely project" perspective on temporary organizational forms, basically neglecting context (Engwall 2003), more recent work has increasingly emphasized a contextual perspective on temporary organizational forms, which sees temporary organizational forms as inextricably embedded within an organizational and social context (Grabher, 2002a, 2004a; Sydow & Staber, 2002). As mentioned before, two levels of analysis are distinguished in the current body of research within this theme: the level of the firm (mostly a PBO) and the level of the wider social context (mostly a project-based industry or community of practice). Both are elaborated below. Table 2.6 provides an overview this theme.

Overview of the literature

The firm-level context. Temporary organizational forms often, although certainly not always, rely on one or several organizations, which found, create or necessitate its creation. The predominant body of research which has studied this firm-level context, and the dependencies and relations between the temporary organizational system and the firm-level context more specifically, have focused on a specific kind of organizational form, namely the PBO (e.g. Gann & Salter, 2000; Hobday, 1998, 2000; Prencipe & Tell, 2001; Whitley, 2006). With regard to the linkages between the temporary system and the firm, extant research has first asked: How can knowledge that is created in a temporary organizational form be sustained in an enduring firm? (N = 21). This relates to the important issue of project-to- firm learning before the project dissolves (Brady & Davies, 2004; Grabher, 2004a), which is one of the critical issues for PBOs (Hobday, 1998, 2000; Prencipe & Tell, 2001). Indeed, how enduring benefits are achieved from temporary organizational forms through learning seems to be currently one of the hot issues in the body of literature, emphasizing elements such as memory objects, embeddedness, developing routines and project capabilities (e.g. Brady & Davies, 2004; Cacciatori, 2008; Keegan & Turner, 2001; Lundin & Midler, 1998; Prencipe & Tell, 2001; Scarbrough et al., 2004b) (see Table 2.6).

A second central question that existing research has posed in regard to the firm and the temporary organizational form is: How can firms manage innovations through temporary ventures? (N = 8). This relates to the proposition that projects by their distinctive features provide to be key settings to achieve innovation, for instance because they create and recreate organizational structures around the demands of

TABLE 2.6
The Embeddedness Theme in Temporary Systems Research

Key Questions	Summary
Firm level context	
1. How is knowledge that is created in a temporary organizational form system sustained in an enduring firm?	Through *project-based* (or *project-to-context*) *learning* PBOs can sustain knowledge from temporary organizational forms (e.g. Bresnen *et al*. 2004; Gann and Salter 2000; Hobday 2000; Keegan and Turner 2001; Lundin and Midler 1998; Sahlin-Andersson and Söderholm 2002; Sydow *et al*. 2004), even as the capacity to learn has been said to be one of the major drawbacks of PBOs (e.g. Hobday 2000). Memory objects (Cacciatori 2008), learning boundaries (Scarbrough *et al*. 2004b), knowledge codification (Prencipe and Tell 2001), economies of repetition and project capabilities (Brady and Davies 2004) are major factors determining the extent of project-based learning taking place
2. How can firms manage innovations through temporary organizational ventures?	PBOs are key settings to achieve innovation because they create and recreate organizational structures around the demands of specific projects (Hobday 1998; 2000). Important issues with regard to project-based innovation concern the integration of business and project processes (Barrett and Sexton 2006; Gann and Salter 2000), organizational structures (Hobday 2000), factors that impediment innovation in projects, such as a project management style that centres around evaluation and control (Keegan and Turner 2002), and the importance of face-to-face interaction (Salter and Gann 2003)
Wider social context	
3. What is the impact of embeddedness in a wider exterior context on interior processes of temporary organizational forms?	*Structural, institutional, social and temporal embeddedness* in enduring (role) structures (e.g. reputation, macro-cultures) has an effect on interior processes such as coordination, practices and pacing (e.g. Baker and Faulkner 1991; Engwall 2003; Hellgren and Stjernberg 1995; Jones 1996; Jones and Lichtenstein 2008; Sydow and Staber 2002; Windeler and Sydow 2001). Vice versa, *cumulative* performance-outcome learning shapes collaborative patterns of cooperation (Schwab and Miner 2008). *Repeated collaboration* is another important context variable (e.g. Faulkner and Anderson 1987; Schwab and Miner 2008; Sorenson and Waguespack 2006) but need not necessarily lead to positive outcomes. When controlled for self-confirming dynamics, temporary organizational forms which are highly embedded in prior relations perform worse (Sorenson and Waguespack 2006)
4. What form do careers take that are made up of subsequent temporary team memberships?	Project-based industries are characterized by restricted access to resources, an active elite, and recurrent contracting. Careers in such industries do not take place within firms; individuals move from temporary team to temporary team, receiving validation from the market and building *career capabilities* regarding knowing why (an individual's values, motivation and identity), knowing how (skills and expertise), and knowing whom (an individual's network) (Arthur, *et al*. 2001; DeFillippi and Arthur 1998; Faulkner and Anderson 1987; Goodman and Goodman 1976; Jones 1996)

specific projects (Hobday, 2000). Important issues which extant work has considered with regard to project-based innovation concern uncovering best practice such as the integration of business and project processes (Barrett & Sexton, 2006; Blindenbach-Driessen & Van den Ende, 2006; Gann & Salter, 2000), studying which organizational structures are best equipped to deal with innovative products (Hobday, 2000) and

identifying the factors that impede innovation in temporary ventures, such as a project management style that centers around evaluation and control (Keegan & Turner, 2002).

The wider social context. Several influential scholars have emphasized in recent years that, apart from being embedded in an organizational context, temporary organizational forms are also influenced by the wider enduring interpersonal networks, epistemic communities and industries in which their participants are embedded (Baker & Faulkner, 1991; Grabher, 2004a; Jones, 1996; Sydow & Staber, 2002; Windeler & Sydow, 2001). A first key question that the existing work has studied with regard to the relation between the temporary organizational form and the wider social context concerns: *What is the impact of embeddedness in a wider exterior context on interior processes in temporary organizational systems?* (N = 22). This question has been posed most explicitly by Engwall (2003), who argued that no temporary organizational system is an island. Research which has studied this question has focused on the impact of the environment on coordination (Bechky, 2006) and uncertainty (Jones & Lichtenstein, 2008), project practices (Windeler & Sydow, 2001), differences in the growth and viability of project networks (Sydow & Staber, 2002), and the uniqueness, legitimacy and prestige of a temporary system (Engwall, 2003) (see Table 2.6). In addition, there are a considerable number of articles which study how the presence or absence of repetitive ties between the participants involved in the temporary system (which can be thought of as the temporal context of the temporary organizational form) influence behaviour, learning and the propensity to engage in subsequent temporary ventures (e.g. Faulkner & Anderson, 1987; Schwab & Miner, 2008; Sorenson & Waguespack, 2006). A fascinating finding in the latter category is that, when controlling for the amount of resources that are invested in temporary organizational ventures, films with deeper prior relations between the actors involved perform worse at the box office (Sorenson & Waguespack, 2006) (see Table 2.6).

A second and final important question that has been studied concerns: *How are careers shaped in project-based industries that are made up of subsequent temporary system memberships?* (N = 8). Goodman & Goodman (1976, p. 495) already noted the human resource problems of temporary organizational system memberships for career progression, as "ad hoc assignments interrupt typical career patterns by drawing people away from their usual functional role". Although there is merit in this claim, subsequent research has tended rather to study industries in which the entire standard of operation is project-based, such as the Hollywood film industry, in which there is no functional role to return to (DeFillippi & Arthur, 1998; Faulkner & Anderson, 1987; Jones, 1996), focusing on such issues as successful career progression in project-based industries (e.g. Jones, 1996) and the building of career capital (e.g. Arthur et al., 2001) (see Table 2.6).

Gaps and future research directions

With regard to the embeddedness theme, extant research has come a long way in identifying the organizational, social and institutional environment of temporary organizational forms (e.g. Engwall, 2003; Grabher, 2002b, 2004a; Schwab & Miner, 2008; Windeler & Sydow, 2001). In fact, the contextual perspective, highlighting the importance of the exterior environment of temporary organizational forms for interior processes, is one of the major accomplishments in temporary systems research in recent years, and it is self-evident that future research should continue working in this terrain, especially on the dialectic between temporary organizational form and its permanent environment. A largely neglected issue in this terrain, however, concerns the (potentially conflicting) loyalties of project participants towards the project versus their ongoing activities in the enduring context (see Grabher, 2002a, p. 212; Clegg & Courpasson, 2004) and how such "home-base" activities impact on processes within the temporary system. Similarly, the issue of multiple team membership poses important questions with regard to the embeddedness of actors in multiple, concurrent temporary organizational systems and the effects this has on issues such as uncertainty, job strain and commitment. This pertains to the dilemma between the autonomy requirements of participants in temporary systems and their embeddedness in organizational settings that demand integration of temporary activities within organizational routines (Sydow et al., 2004). Miles (1964), for instance, elaborately highlighted the virtues of participants in temporary organizational forms being autonomous and isolated, "apart together" groups of people, left to their own devices. On the other hand, the benefits of embeddedness in enduring context with regard to knowledge transfer are well-documented (Ibert, 2004; Scarbrough et al., 2004b). I would propose to re-position this dilemma into a strategic choice for organizations. Lundin & Söderholm (1995) hinted in this direction by mentioning that the degree of isolation/embeddedness of a temporary organization should be a function of the phase of the system's life cycle. Seeing this dilemma as a strategic choice goes even further to acknowledging that the degree of isolation and autonomy granted towards a temporary organizational form can be influenced by organizational actors, and as such is reminiscent of the influential work on boundary management (e.g. Ancona, 1990; Ancona & Caldwell, 1992). Including the insights from this stream of work into temporary organizational systems research could, in the author's view, help to uncover how, when and for which types of temporary systems designing the temporary system as fully embedded or stand-alone leads to the most optimal outcomes.

The embeddedness theme uncovers another gap. As Table 2.2 demonstrates, the majority of empirical research has taken a cross-sectional approach, or tracked the life cycle of a single temporary system (50, vs. 22 longitudinal studies; see Table 2.2). The problem with such designs lies in processes that extend beyond the lifetime of a single temporary organizational system. This relates to the systems being temporary: many (contextual) processes extend over their time-delimited life cycle. In temporary systems research, particularly, longitudinal designs are necessary to study more thoroughly a

broad number of important topics mentioned in this review. For instance, with regard to role-based coordination in temporary organizational systems, Bechky herself notes that longitudinal analyses of role enactments of participants over subsequent temporary system memberships need to be undertaken in order to gain more support for how role structure and role enactment shape co-ordination in social systems (2006, p. 14). Also with regard to repeat collaboration over succeeding temporary systems memberships, longitudinal research is needed to probe further into the conditions under which temporary organizational forms with strong embeddedness in prior relations perform worse (Sorenson & Waguespack, 2006) and, in contrast, under which conditions such repetitive temporary systems are associated with higher performance (Schwab & Miner, 2008). Longitudinal designs would also allow the inputs (knowledge, procedures, experience) and outputs (knowledge, products) of temporary systems to be more fully appreciated beyond their start and end, and how these relate to prior and succeeding projects (Engwall, 2003). As such, a direction for future research is for temporary organizational forms research to expand its temporal scope (Engwall, 2003) into longitudinal analyses of succeeding temporary systems. Ideally, such longitudinal designs should also take sample size into account. As is clear from Table 2.2, by far the majority of empirical studies are small N case studies (56, vs. 16 large N studies). Although the specific strengths of in-depth, small N studies are well known, especially in emerging fields (Eisenhardt, 1989), it seems that the field has reached a state in which future research should test a number of insights that have been developed in the large number of in-depth case studies in larger samples. In particular, large N confirmatory studies will help the field in finding common areas of agreement, on which future research can solidly build further.

As a final direction for future research, embeddedness should also be seen as a dimension of variation, namely by the degree of embeddedness of a temporary organizational form in its environment (e.g. Løwendahl, 1995; Schwab & Miner, 2008). Indeed, where Schwab & Miner (2008) proposed that at one extreme temporary organizational forms can be stand-alone or fully embedded, Løwendahl (1995) quite similarly proposed that the degree of embeddedness of temporary structures ranges between fully incorporated by the enduring context, and full authority. Following a structuration perspective, one might conclude that, in strongly embedded temporary systems, interior processes are to a relatively large extent influenced by structure (as in Bechky, 2006), whereas in relatively less embedded temporary systems the balance rather tips to emergent action (as in Meyerson et al., 1996; Weick, 1993). Interestingly, Lundin & Söderholm (1995) demonstrated that the degree of openness or embeddedness of the system with regard to functioning is also a matter of project phase: ideally, projects are strongly embedded in the organizational context at the start and beginning of the project, but isolated in the execution phase.

2.5 Conclusion

In conclusion, this chapter set out to offer an integrated overview of the current body of literature surrounding IOPVs, by subsuming them under the broader category of temporary organizational forms, and by demonstrating their conceptual embeddedness in this literature. In so doing, the research on temporary organizational forms was identified to be a distinct field of research, and potentially fruitful areas for future research were highlighted. Moreover, I attempted to draw attention to the significant topic of temporary organization, its diversity and its implications for broader theories of organizing. More specifically, four broad themes in the literature were identified: time, team, task and embeddedness. Within each of these themes, the key questions and debates were noted, and the current state of the art was summarized. The gaps in what we have come to learn of this increasingly important form of organization and avenues for future research to consider were also noted. One overarching future research direction concerned acknowledging and systematically identifying the variation between different types of temporary organizational forms, and it was attempted to show how each theme can be viewed as a theoretically relevant dimension of variation. As a first attempt towards integration around the concept of temporary organizational forms, however, this study suffers from a number of limitations, and they should be noted.

First, the present review categorized the temporary organizational form as a separate field of research around its "temporariness", whereas this field of research has only recently come to be regarded as distinct. This is not necessarily a drawback, but provided some challenges in coming to a coherent review. Second, because of the diversity in the reviewed body of literature, this review at times needed to stay on a general level, providing a broad overview rather than a meticulous account of very detailed findings. After this effort, the author would suggest future research to go in-depth into one of the particular areas set out in this review. As a third and final limitation, it is a reality that some potentially relevant literature might have been missed. As stated before, however, it is strongly felt that the publications identified are representative of the current body of scholarly literature and, as such, it might not be necessary or realistic to include every possible work (see Provan et al., 2007). The fragmentation of the field of temporary organizational forms and the few integrative efforts that have been conducted in it thus far, may have, on the one hand, led to the conclusion that this literature review is perhaps not exhaustive but, on the other hand, equally underlines the relevance of such a study in the first place.

The next chapters will build on the research reviewed in this chapter, and will empirically start to explore the more specific IOPV form of organization, as a special case of temporary organizational form.

Chapter 3

Are they for real? The Nature and Prevalence of Inter-Firm Projects[7]

3.1 Introduction

As more and more industries look for flexible ways of production in the wake of rapidly changing market environments, inter-organizational project ventures (IOPVs) have been claimed to be becoming an increasingly important mode of organization (e.g. Kenis et al., 2009). This trend would likely be a result of the fact that in today's economy project work often requires the involvement of outside project partners (Maurer, 2010), which provide organizations with flexible network solutions through limited duration partnerships (Jones & Lichtenstein, 2008; Schwab & Miner, 2008). IOPVs challenge a number of the existing notions that have been developed mostly on the basis of studies of in-house projects (Söderlund, 2004a). For one, inter-firm projects lack a traditional hierarchical structure between the collaborating actors, which has important implications with regard to coordination and governance (Jones & Lichtenstein, 2008; Kenis et al., 2009). In addition, needing to cooperate over the boundaries of organizations places an increasing emphasis on trust development and the management of opportunism (Maurer, 2010), and a shift in emphasis from drawing up ad hoc contracts for single projects to long-term relations that need to be "matched" in a project context (Dahlgren & Söderlund, 2001). Although inter-organizational project ventures might thus seem to raise all kinds of interesting new insights and might be one of the new frontiers in project research (Söderlund, 2004a), there are a number of urgent and fundamental gaps in our knowledge of this kind of organization that need to be addressed. The present chapter will start to answer these questions, and empirically explore the IOPV phenomenon along the four themes elaborated in chapter 2.

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[7] A slightly modified version of this chapter is forthcoming as:
Bakker, R.M., Knoben, J., De Vries, N. en Oerlemans, L.A.G. (in press). The Nature and Prevalence of Inter-Organizational Project Ventures: Evidence from a large scale Field Study in the Netherlands 2006-2009. *International Journal of Project Management.*

While this chapter, in line with the rest of this dissertation, is written in the first person, this research was thus conducted in cooperation with Joris Knoben, Nardo de Vries, and Leon Oerlemans.

A previous version of the present chapter was presented at the 2010 EURAM Conference (Rome, May 2010).

The first question this chapter will answer pertains to the prevalence of IOPVs. Although it is sometimes claimed that inter-organizational types of project ventures are becoming increasingly common (Kenis et al., 2009; Maurer, 2010), there is a dearth of systematic, industry-wide data on the prevalence and characteristics of IOPVs. The reality seems to be that we do not exactly know whether this type of project is in fact becoming increasingly prevalent, as most evidence thus far has been anecdotal. What if we are wrong? Söderlund (2004a: 656) concluded on the basis of a literature review that one of the important trends in recent project research is that "we observe an increasingly large number of publications taking special interest in the relationships between firms (i.e., inter-firm projects)". When it is in fact uncertain that we are dealing with a trend that is "real" in the sense that it exists "out there", this increasing stream of emerging research runs the risk of being out of sync with organizational reality. This would be detrimental to any research field, but especially to that of project management, which capitalizes on its strong link to practice - one that seems to have eroded in many other research fields over the years (Rynes et al., 2001). In my view, a thorough large scale empirical analysis could help to legitimize the study of IOPVs by checking whether it is in sync with organizational reality, and provide an empirical foundation for the studies that have recently staked an increasing interest in them (see Kenis et al., 2009).

A second important and quite fundamental gap in our knowledge of inter-organizational projects concerns their nature. It seems that over the years there have emerged at least two positions on this. Some authors, such as Goodman & Goodman (1976), but also Ibert (2004) and the PMBOK emphasize that projects are in general "almost unique" (Goodman & Goodman, 1976: 495). This is a position that is found in the literature more often, as many (e.g. Lindkvist et al., 1998; Gann & Salter, 2000; Meyerson et al., 1996) have also referred to the one-off and exceptional qualities of projects. Others (e.g. Engwall, 2003; Lundin & Söderholm, 1995) have started to question this notion as in the words by Brady & Davies (2004: 1605) "it equates project-based activities with non-routine behaviour", whereas often "firms undertake 'similar' categories of projects [..] involving repeatable and predictable patterns of activities". This debate on the nature of projects is yet to be resolved. A large scale analysis of IOPVs could contribute to this issue by shedding new light on their characteristics with regard to, amongst others, the types of tasks they execute and their degree of social embeddedness.

In relation to these two concerns, the present chapter attempts to draw inferences on the prevalence of IOPVs over time, and their main characteristics. These inferences are based on two waves (2006 and 2009) of a repeated large scale survey among 2,000 SMEs in the Netherlands. The research question I aim to answer is: what is the prevalence of the inter-organizational project ventures in which Dutch SMEs participate, and what are the main characteristics of these ventures?

To foreshadow the most important findings in relation to the above, the present chapter makes two contributions to the literature on IOPVs. First, I empirically demonstrate that IOPVs are in fact a substantial economic activity: despite the economic crisis their prevalence remained stable and significant between 2006 and 2009. Furthermore, the

results indicate that trends in prevalence were influenced by two types of dynamics: the *number of organizations* that engages in IOPVs, and the *number of IOPVs per organization* for the ones that do engage in them. The stability in prevalence that is found is the outcome of two opposing trends on these metrics: a decrease in the number of organizations that engages in IOPVs, but an increase in the number of inter-organizational projects per firm that does engage in them. In my view, this finding goes some way in legitimizing the rapidly emerging body of research studying this organizational form by demonstrating that such ventures are in fact "for real", and grants a quite unique peek at the dynamics of specialization involved in their prevalence. Moreover, they point out an important managerial implication: when fewer firms engage in inter-organizational projects, but the ones who do engage in more of them at a time, many organizations are faced with the necessity of managing larger portfolios of simultaneous projects involving different external partners. This brings an increased complexity to project portfolio management, with regard to, for instance, resource allocations and alliance management (Engwall & Jerbrant, 2003; Hoffmann, 2007).

A second contribution of the present chapter concerns that I can empirically demonstrate that although there is considerable variation on their most important dimensions, most IOPVs are in fact quite routine in their nature: they solve routine tasks, and are embedded in prior relations between the collaborating project partners. This finding implies that the view of inter-organizational projects as being unique entities in all aspects can be questioned. In turn, it provides empirical support for some of the emerging theories of project-based learning (e.g. Brady & Davies, 2004; Grabher, 2004a; Cacciatori, 2008) which have staked the claim that routine tasks and embeddedness in latent networks between the partnering organizations provide a suitable pretext for knowledge transfer from projects to subsequent other projects (project-to-project learning), and from projects to the organizations involved (project-to-organization learning). Although some have drawn explicit interest to the presupposed inabilities of projects to sediment information and preserve knowledge because of their transient and unique nature, there would on the basis of these findings actually conceptually seem to be more opportunities for learning than originally thought. Moreover, I find that many IOPVs include multiple (>2) partners. This has important consequences for coordination (Das & Teng, 2002) and governance (Lavie et al., 2007). I will elaborate these and other claims in more detail in the remainder of this chapter.

3.2 Theoretical Background

3.2.1 The prevalence of Inter-Organizational Project Ventures

In 1965, Warren Bennis predicted that "organizations of the future will have some unique characteristics. The key word will be "temporary"; there will be adaptive, rapidly changing temporary systems" (p. 34). Such claims, heralding a new, more temporary

and ad-hoc logic of functioning of organizations have been repeated on numerous occasions since then (Söderlund, 2004a; Söderlund & Tell, 2009; Winter et al., 2006). Midler (1995) referred to this as "projectification", i.e. the process by which the organization of work is increasingly manifested in temporary organizational ventures, in which people work together on a project basis. Whereas some industries have already had a long history of such project-based organization, like film (Sorenson & Waguespack, 2006), theatre (Goodman & Goodman, 1976) and construction (Eccles, 1981), it has been proposed to exist in growing numbers in many other industries as well, including software development, advertising, biotechnology, consulting, emergency response, fashion, television and complex products and systems (DeFillippi, 2002; Hobday, 2000; Sydow & Staber, 2002; Weick, 1993). Reasons why such industries would increasingly switch to projects as a preferred form of organization concern that there is an increasing need for flexible ways of production, a tendency to try to avoid long term resource commitments, and a need for innovative products and services that are developed in the context of their application (Duysters & De Man, 2003; Grabher, 2004a).

Given the amount of references to such an increasing prevalence of temporary, project-based modes of organization, it is quite surprising that there are so few systematic, large scale empirical studies undertaken to assert the veracity of this claim. I know of only one that can be characterised as such, which concerns the study by Whittington et al. (1999). Based on a large scale European panel study into organizational innovation, Whittington and colleagues found that project-based structures had become significantly more pervasive in 1996 compared to 1992. This was essentially their only finding directly in the realm of projects, as the study by Whittington and colleagues was not primarily geared toward project-based organization. Nevertheless, it is an excellent starting point to build on. More specifically, I argue that my study complements Whittington et al.'s study in the following ways. First, the study by Whittington et al. was solely geared toward intra-organizational project structures whereas my focus is inter-organizational, reflecting the concern that projects increasingly necessitate the involvement of outside parties (Jones & Lichtenstein 2008; Maurer, 2010). Second, whereas the study by Whittington et al., (1999) was focused on large organizations, ours is on small and medium sized firms (for reasons explained later). Third and finally, much has happened since Whittington and colleagues collected their data in 1996, which raises the possibility that their findings do not accurately describe the current situation, especially given the current environmental turbulence and the many options for organizations to be adaptive.

3.2.2 Dimensions of Inter-Organizational Project Ventures: Time, Task, Team and Embeddedness

In line with this study's research question, I aim to not only touch upon the prevalence of IOPVs, but on their main characteristics as well. This begs for a number of theoretically informed dimensions to empirically describe IOPVs, which help to fill the

gap identified in the introduction of this chapter. I draw in this regard on the broader literature on temporary and project-based organization. Lundin & Söderholm (1995) proposed temporary organizations (such as projects) to relate to four basic dimensions: time, team, task, and transition. This four-fold taxonomy was recently updated and slightly modified in a literature review of temporary organizational forms (Bakker, 2010). More specifically, Bakker (2010) found transition to play only a minor role in the body of literature, and proposed instead to include embeddedness (or "context") as a dimension, given the rapidly growing research attention to how projects are embedded in wider organizational and institutional contexts (e.g. Engwall, 2003; Grabher, 2004b). I decided to include the latter classification (see below), as it is up to date and firmly grounded in the current body of literature, and grants explicit attention to the theme of embeddedness, which, as mentioned, is an important indicator of the nature of projects (Sydow & Staber, 2002). In addition, embeddedness has important implications for project-based learning, an issue that will be revisited in the later sections of this chapter. Following Bakker (2010), I will briefly discuss each of the four identified dimensions (time, team, task and embeddedness), together with why they are important for inter-organizational project ventures.

The first, **time**, relates to the fact that projects are temporary. One dimension of time that has been proposed to be especially relevant is duration. Duration is an important variable in projects, because when project ventures are of (extremely) short duration, there is not enough time to develop features such as personal relations within the project, a shared task-relevant knowledge base, or regular trust (Meyerson et al., 1996). In contrast, when project ventures are of relatively longer duration, they are often thought of as developing processes and characteristics more similar to those found in enduring organizations (Sydow et al., 2004).

The second important dimension of IOPVs developed in the literature concerns **team**. By team, many studies refer to the groups of people that work together in projects (e.g. Goodman & Goodman, 1976). In my IOPV context, which takes the organization rather than the individual as the unit of analysis, team might best be thought of as the set of different organizations involved in the project venture. As such, one of the crucial variables herein concerns the size of this set. Shenhar (2001b) proposed size to be an important source of variety between different project ventures, as it pertains to many processes going on within them, like, for instance, the kind of coordination mechanisms likely to be encountered and the complexity of the project venture.

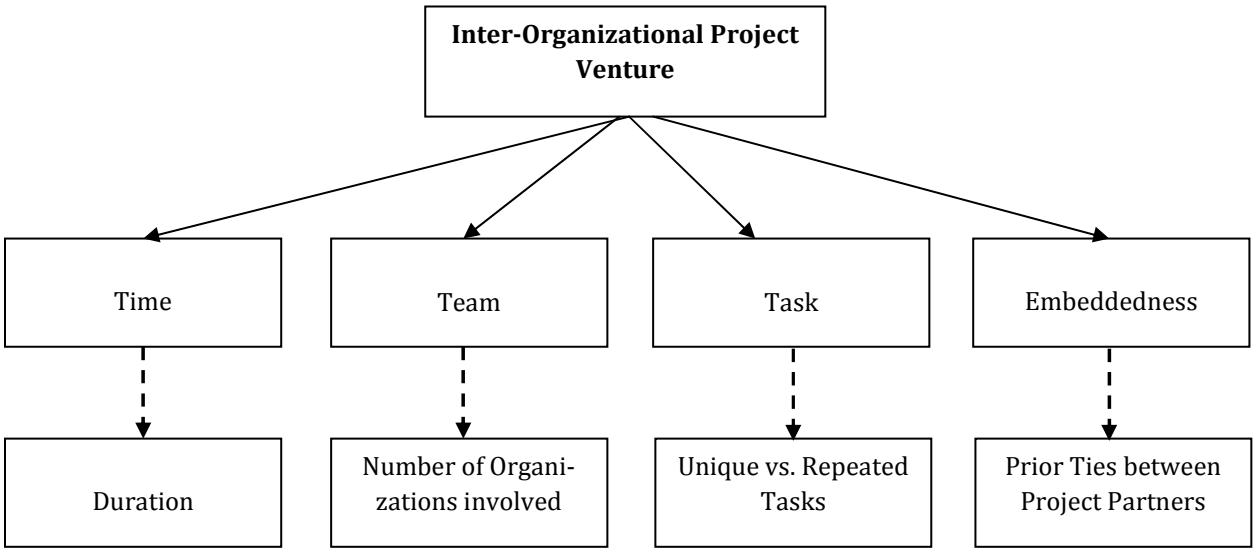
A third important dimension of project ventures concerns **task**, because a task definition is often the raison d'être for initiating a project (Lundin & Söderholm, 1995). One of the most important issues with regard to the task of project ventures concerns whether it is repetitive or unique (Brady & Davies, 2004). The traditional view of the ideal type temporary venture has stressed project ventures to be highly unique, solving a one-off type of tasks (Goodman & Goodman, 1976), which leaves little room to develop routines and trust or harvest knowledge (Meyerson et al., 1996). As mentioned, Lundin & Söderholm (1995) and Brady & Davies (2004) proposed, on the other hand,

that the tasks of a project might in some instances be rather repetitive. According to Brady and Davies (2004) a consequence of such repetitive rather than unique tasks might be that firms have a better opportunity of developing "project capabilities", meaning that through experience, firms can develop explicit knowledge and routines in how to most optimally execute project tasks.

The fourth dimension mentioned by Bakker (2010), which was not proposed by Lundin & Söderholm (1995), concerns **embeddedness**. Whereas traditionally project ventures were often regarded as stand-alone (Engwall, 2003), it has increasingly been recognized that project ventures are to some extent embedded in an enduring environment that impacts their functioning (Grabher, 2004a). A crucial kind of embeddedness of projects concerns whether there are prior ties between the organizations engaged in the venture (i.e. a kind of relational recurrence, in contrast to the aforementioned task recurrence). The reason why this is an important dimension concerns that despite the fact that project collaborations themselves are temporary, project partners coordinate their activities with reference to practices and experiences emerged from collaboration in previous ventures (Sydow & Staber, 2002). In other words, it might be the case that IOPVs are part of larger, enduring latent collaboration networks, in which the project venture is a continuation of prior ties between the parties involved (see Bechky, 2006). This is relevant, as it relates to issues like experience, trust-building, governance, and the likelihood of the emergence of shared understandings between and among the organizations, because "when exchanges evolve from one-off, single interactions to repeated and durable long-term relationships [..], understandings become widely shared in a market or field and a rich project ecology emerges that facilitates coordination and guides collaborative activities among organizational actors" (Jones & Lichtenstein, 2008: 233).

In sum, then, following the direction of the available literature on temporary and project-based organization, I will in the empirical analyses describe the characteristics of IOPVs by time (duration), team (number of organizations involved), task (unique/repeated), and embeddedness (prior ties). I assume every inter-organizational project venture to fall somewhere on these dimensions. This is visually captured in Figure 3.1.

FIGURE 3.1
Dimensions of Inter-Organizational Project Ventures and their Measurement



3.3 Methodology

3.1.1 Research Setting

The primary means of data gathering underlying the present chapter was a repeated survey amongst small and medium sized enterprises (SMEs; meaning 1-99 employees[8]) in the Netherlands. This was executed by a joint effort by the professional research institute *EIM Business and Policy Research* and Tilburg University. There are several reasons why I specifically targeted this research setting.

My choice to target SMEs was inspired by the fact that particularly for SMEs temporary project ventures are very important, perhaps even necessary, vehicles to achieve tasks too big or complex for them to complete alone because of a lack of expertise or diseconomies of small scale. In fact, it has been recently found that on average one third of the total turnover of SMEs is project-based (Turner et al., 2009).

A second, more general reason concerns that SMEs are an under-represented category in large N quantitative research and sampling techniques (Schilling, 2009). This is the case despite the fact that most economic activity takes place not in large firms, but in SMEs. SMEs comprise 99.1% of the approximately 850,000 firms in the Netherlands, and they contain the majority (52.6%) of the total number of jobs (Statistics Netherlands). Moreover, SMEs account for a major part of the economy not only in the Netherlands, but in the rest of Europe (and the world) as well (Mulhern, 1995).

[8] This is the official Dutch definition of SMEs. The Eurostat definition of SMEs refers to firms of 1-250 employees.

There are also several reasons why I targeted the Dutch market specifically. The Dutch economy is a very open economy, which means that it is highly dynamic and outside influences quickly reverberate throughout the economy (Hessels, 2007). Therefore, such open economies, like the Netherlands, are usually frontrunners in economic developments, which makes the Netherlands a very suitable research setting to be able to pick up on the kind of trends I wish to capture. Moreover, the most recent Community Innovation Survey (CIS) found that in terms of inter-organizational collaboration activity by innovative firms more generally, the Netherlands is highly representative of the European average.[9] Therefore, by studying the prevalence and characteristics of inter-organizational project ventures in the Netherlands, I hoped to obtain an up-to-date and to some extent generalizable view of the trends that form the main focus of the present chapter.

3.3.2 Sample

For purposes of this study, a panel of 2,000 Dutch SMEs was approached in two separate waves of data collection, one in 2006 (from here on referred to as T1) and one in 2009 (T2). The choice for this time lag was a function of the duration of inter-firm projects. As I expected that the majority of projects would have an existence of less than 3 years (something that was validated by the results presented later) this time lag would allow making independent observations (i.e. there exists little overlap with still existing projects between the two measurement points).

The panel of 2,000 SMEs is contacted yearly by *EIM Business and Policy Research.* Panel attrition (panellists leaving the panel in between waves of data collection, for example because of organizations going bankrupt) is handled by filing up the sample to 2,000 every year, partly by contacting new firms. As this panel maintenance is one of *EIM*'s primary concerns, and the majority of the sample comprises a stable core of firms, response rates largely exceed those usually reached when surveys are sent out to random organizations. A breakdown of the response per sector and size class for both waves, along with population data and relative weight factors are presented in Table 3.1. It will be discussed in more detail below.

[9] Eurostat CIS 2006: http://epp.eurostat.ec.europa.eu/portal/page/portal/science_technology_innovation/data/database

TABLE 3.1
Breakdown of Samples 2006 (T1) and 2009 (T2), Population Statistics, and Weight Factors

Sector *Size class*	**N Sample 2006**	Relative Proportions in Sample 2006	Relative Proportions in Population 2006 [10]	Weight Factor 2006	**N Sample 2009**	Relative Proportions in Sample 2009	Relative Proportions in Population 2009 [1]	Weight Factors 2009
Manufacturing	**131**	16.0%	8.6%	0.535	**296**	14.9%	7.5%	0.502
Of which: 0-9 employees	64	7.8%	7.0%	0.896	144	7.2%	6.1%	0.835
10-99 employees	67	8.2%	1.6%	0.190	152	7.6%	1.4%	0.186
Construction	**79**	9.6%	13.9%	1.445	**284**	14.3%	15.5%	1.087
0-9 employees	43	5.3%	12.8%	2.430	157	7.9%	14.3%	1.815
10-99 employees	36	4.4%	1.2%	0.269	127	6.4%	1.2%	0.187
Trade and Repair	**150**	18.3%	30.0%	1.640	**353**	17.8%	26.3%	1.482
0-9 employees	114	13.9%	27.6%	1.982	268	13.5%	24.0%	1.78
10-99 employees	36	4.4%	2.5%	0.558	85	4.3%	2.3%	0.54
Hotels and Catering	**61**	7.4%	6.9%	0.921	**179**	9.0%	5.8%	0.648
0-9 employees	29	3.5%	6.4%	1.794	84	4.2%	5.3%	1.252
10-99 employees	32	3.9%	0.5%	0.131	95	4.8%	0.5%	0.115
Transport and Communication	**63**	7.7%	5.1%	0.658	**171**	8.6%	4.6%	0.538
0-9 employees	25	3.1%	4.4%	1.428	89	4.5%	4.0%	0.888
10-99 employees	38	4.6%	0.7%	0.151	82	4.1%	0.7%	0.158
Financial services	**82**	10.0%	2.7%	0.268	**156**	7.9%	2.7%	0.343
0-9 employees	43	5.3%	2.5%	0.477	110	5.5%	2.5%	0.454
10-99 employees	39	4.8%	0.2%	0.038	46	2.3%	0.2%	0.078
Business services	**184**	22.5%	27.0%	1.200	**349**	17.6%	28.3%	1.609
0-9 employees	136	16.6%	25.3%	1.525	256	12.9%	26.4%	2.047
10-99 employees	48	5.9%	1.6%	0.280	93	4.7%	1.9%	0.404
Other services	**69**	8.4%	5.9%	0.698	**199**	10.0%	9.2%	0.922
0-9 employees	59	7.2%	5.7%	0.789	138	6.9%	8.9%	1.282
10-99 employees	10	1.2%	0.2%	0.158	61	3.1%	0.3%	0.107
Total	**819**	**100%**	**100%**	**1**	**1987**	**100.0%**	**100%**	**1**

[10] Based on BLISS data for the total number of SMEs in the Netherlands for 2006 and 2009.

At T1, a total of 819 firms out of the total 2,000 participated in the survey, which constitutes a response of 41%. The means of data gathering in this survey was an internet survey. Table 3.1 presents an overview of the amounts of firms that responded at T1, and the relative proportions of firms in the total population (based on the total number of SMEs in the Netherlands in 2006 per sector and size class). As is custom in large scale survey designs, I calculated relative weights for each cell, based on the proportion between the sample size per cell, and the total number of firms in the population per cell (see Table 1). By assigning all of the 819 responding firms at T1 their relative weight, the sample is representative of the population from which the sample was drawn (i.e. the total number of SMEs in the Netherlands in 2006).

In order to increase the response rate in the second wave, the 2009 survey was undertaken by means of a telephone survey, which was conducted by trained interviewers of *EIM*. This modification was effective, as in this second wave a total of 1,987 organizations participated. This constitutes a response rate of 99%. This extremely high response is mainly a consequence of the telephone survey method, and the fact that many of the firms in the approached panel have a long history of working with *EIM* in this panel. The telephone survey at T2 included the exact same items that were posed in the internet survey at T1 (in order to make comparisons over time possible) plus some additional items on the characteristics of the project ventures these SMEs engaged in. Referring to Table 3.1, I again assigned relative weights to all 1,987 firms that participated in the survey at T2, based on the total number of firms in the population in 2009. As was the case for T1, the sample at T2 is representative for the population from which the sample was drawn (i.e. the total number of SMEs in the Netherlands in 2009).

Before proceeding, two important issues need to be addressed regarding the extent to which these two samples at T1 and T2 can be compared. First, as one wave was executed by an internet survey, and the other by a telephone survey, one might raise concerns about the extent to which the items at T1 measure the same constructs as what their corresponding items measure at T2 (validity). With regard to this issue it has been established that the validity of internet surveys vis-à-vis telephone surveys generally does not differ radically (Simsek & Veiga, 2000). This is the case especially when the items solicit relatively non-sensitive information (e.g. project ventures of a firm). In other words, only studies that solicit sensitive information about respondents (e.g. sexual preference) generally find differences in the way identical items are answered in a telephone vis-à-vis an internet survey. As the survey solicited no such sensitive information, there seems little reason to assume that the validity of the items in (one of) the two waves would be in jeopardy.

A second issue regarding the extent to which the samples can be compared concerns the difference in response rate for the two samples, as mentioned, the internet survey at T1 yielded a response rate of 41%, whereas the telephone survey at T2 yielded a response of 99%. To tackle this concern, I ran an additional analysis to check whether there was any indication of organizational self-selection between the two samples. More

specifically, I took the following approach. First, I took as a baseline the key item that was present in both surveys, namely, whether the firm in question at the time participated in at least one IOPV. At T2, 1,979 firms answered this particular question, of which 1,765 already existed at T1 (214 firms were founded in the meantime). Of this group, 506 had participated in the internet survey at T1 as well, and 1,259 had not, due to the aforementioned differences in the composition of the panel over time. I then compared the two groups (the one which had and the one which had not also participated in the wave at T1) to determine whether there were differences in the extent to which they engaged in IOPVs. Specifically, I ran a logistic regression analysis

in which the dependent variable concerned whether a focal firm participated in an IOPV at T2 (yes/no), and as independent variable whether it had participated in the survey at T1 (yes/no). I also included a number of firm characteristics as controls, namely the logged size and logged age of the firms, and the industry in which it operates. Essentially, this is a test of non-response bias (see Rogelberg & Stanton, 2007), i.e. whether the sample of firms that participated at T2 is equivalent to those firms that participated at T1. Table 3.2 shows no statistically significant differences were found. In other words, controlling for firm characteristics, variance in the score of a given SME on this crucial item at T2 is not significantly influenced by its participation at T1. This presents evidence that there is no response bias between the two waves at T1 and T2, and that one can therefore meaningfully compare the two samples.

3.3.3 Operationalizations

In line with the research question, I wished to enquire both into the prevalence and main characteristics of the IOPVs in which SMEs engage. Specifically, I operationalized these variables in the study as follows.

With regard to prevalence, my study employed three measures. First, every participating firm was asked the general question of *whether it currently engaged in one or more collaborative relations with other firms*, defined as inter-organizational relations between organizations that involve a joint execution of tasks toward the accomplishment of a common goal (what were deemed inter-organizational relations, or IORs, which also include non-temporary, non-project alliances). Those who did, were subsequently asked *whether any of these collaborative agreements concerned temporary project collaborations*, defined as temporary inter-organizational project ventures in which the participating firms had agreed ex ante that the duration of the collaboration would be limited (either by a date or the fulfilment of the project) and which was characterised by a joint execution of tasks (i.e. what was defined as an IOPV before).

TABLE 3.2
Test of Response Bias between waves at T1 and T2 [11]

	B	S.E.	Sig.
Participation at T1	.236	.157	.133
Ln Size 2009	.372	.057	.000
Ln Age	-.165	.100	.100
Sector dummies:			
Construction	.510	.247	.039
Trade & repair	-.636	.292	.029
Hotels and Catering	-.790	.364	.030
Transport and Communication	-.387	.330	.240
Financial Services	.012	.299	.968
Business Services	.712	.236	.003
Other services	-.364	.329	.268
Constant	-2.264	.359	.000
Number of observations	1765		
Nagelkerke R-square	.096		

Those that did, were subsequently asked about the *number of temporary inter-organizational project collaborations* they currently engaged in. These three variables (prevalence of inter-organizational relations per sé, prevalence of IOPVs, and number of IOPVs per firm) were measured with exactly corresponding items in both waves at T1 and T2. Moreover, every firm that indicated that it was at the time engaged in one or more temporary project ventures was asked for the main *motivation* why this project venture had been set up (for those firms which were at the time engaged in more than one project venture, I asked the respondent to concentrate on the most important one). This question was also posed at both T1 and T2.

With regard to the characteristics of the IOPVs, I measured the dimensions discerned in Figure 3.1 (time/team/task/embeddedness) in the following way. First, the *duration* of the inter-organizational project (time) I measured by the start and expected end date of the venture; the *size* (team) of the project venture I operationalized in terms of the number of participating organizations; the task I operationalized as being *unique or repetitive* in nature; and embeddedness was operationalized by enquiring whether there existed *prior ties* between the partnering organizations, measured by enquiring whether the focal organization had worked together before with the other partnering organizations within the last 3 years.

[11] Dependent variable: Likelihood of a focal firm engaging in inter-organizational project venture at T2.

3.4 Results

I present the main findings with regard to the prevalence and characteristics of temporary project ventures among SMEs in the Netherlands below, describing the situation in 2006 (T1) and 2009 (T2) separately first, and then analyse the trend between the two.

3 4.1 Prevalence of Inter-Organizational Project Ventures

With regard to prevalence, Tables 3.3 and 3.4 demonstrate the percentages of SMEs that engage in inter-organizational project ventures per sector at T1 and T2, the percentage of firms that engages in inter-organizational relations of any kind, the relative proportion of project ventures on overall inter-organizational relations, and for those organizations that do engage in IOPVs, the amount of IOPVs that they engage in, again per sector, at T1 (2006) and T2 (2009). Since I sampled SMEs, the focus in the present chapter is on the inter-industry differences rather than on size class differences amongst this group.

Table 3.3 presents the weighted findings pertaining to the prevalence of IOPVs in 2006. It indicates, amongst others, that in 2006, on average 16% of SMEs in the Netherlands engaged in IOPVs. (In order to interpret this number, the average percentage of SMEs which engaged in any type of inter-organizational collaboration, including non-temporary non-project alliances, was 44%). The highest concentration of inter-organizational project ventures was found in the Business Services sector (28%), and lowest in Trade and Repair (7%). As a proportion of the total number of inter-organizational relations (including other, more permanent alliances as well), in 2006 IOPVs accounted for 36% on average. On an industry level, Business Services again scores the highest percentage: in 2006 over half (52%) of all inter-organizational relations in this sector concerned IOPVs. Also the Construction sector scored high in this regard, with 46% of the total number of inter-organizational relations being IOPVs. The lowest percentage was found in Trade and Repair, where the far majority of firms prefer open-ended collaborations over temporary project ventures; only 18% of the inter-organizational relations are temporary in this industry (see Table 3). Table 3 further indicates that amongst the group of SMEs that does engage in IOPVs, the average amount of projects they engage in simultaneously in 2006 is 2.63. Here one can see that firms in the Transport and Communication industry hold the highest amount of IOPVs, engaging in almost 4 of them on average (3.81).

TABLE 3.3
Prevalence of Inter-Organizational Project Ventures among SMEs in 2006

Sector	% of SMEs that engages in inter-org. project ventures	% of SMEs that engages in any form of inter-org. relations	Proportion of project ventures among inter-org. relations general	Av. number of project ventures per SME
Manufacturing	14%	38%	36%	2.07
Construction	18%	39%	46%	2.40
Trade and repair	7%	40%	18%	2.17
Hotels and Catering	17%	53%	32%	1.97
Transport and Communication	8%	43%	19%	3.81
Financial services	10%	41%	25%	3.05
Business services	28%	54%	52%	3.02
Other services	9%	32%	27%	1.52
Total	**16%**	**44%**	**36%**	**2.63**

Table 3.4 presents a similar overview of the weighted prevalence of IOPVs, but for T2 (2009). It indicates, amongst others, that in 2009, on average 11% of SMEs in the Netherlands engaged in IOPVs. Similar as to 2006, the highest percentage is found in the Business Services industry (18%). The lowest concentration of IOPVs is found in Hotels and Catering (2%). When compared to the total number of all inter-organizational relations, IOPVs on average account for 28% in 2009. Similar to 2006, the highest relative proportions are found in Construction (where 44% of all inter-organizational relations concern IOPVs) and Business Services (36%). The lowest relative proportion is found in Hotels and Catering (10%). Amongst the group of SMEs that does engage in IOPVs, firms on average engage in 3.69 of them at the same time. As in 2006, Transport and Communication scores among the highest in the amount of IOPVs in which firms engage (6.09), surpassed only, somewhat surprisingly, by those in Trade and Repair, where those few firms that do engage in IOPVs, seem to do so in many (namely 7.03: see Table 3.4). Overall, it is clear from the findings there is considerable industry variation concerning the prevalence of IOPVs.

TABLE 3.4
Prevalence of Inter-Organizational Project Ventures among SMEs in 2009

Sector	% of SMEs that engages in inter-org. project ventures	% of SMEs that engages in any form of inter-org. relations	Proportion of project ventures among inter-org. relations general	Av. number of project ventures per SME
Manufacturing	10%	44%	23%	2.39
Construction	15%	33%	44%	2.25
Trade and repair	6%	35%	17%	7.03
Hotels and Catering	2%	25%	10%	1.88
Transport and Communication	9%	36%	25%	6.09
Financial services	10%	48%	21%	4.74
Business services	18%	51%	36%	3.06
Other services	6%	29%	20%	5.82
Total	**11%**	**39%**	**28%**	**3.69**

Besides these static descriptions, the trend that these findings describe, i.e. the relative differences between 2006 and 2009, is quite intriguing as well. Table 3.5 presents the weighted relative differences between the two waves of data collection, by subtracting the percentages at T1 (2006) from those at T2 (2009). For clarification, the shaded cells refer to the cells in which one can see an increase in 2009 relative to 2006.

TABLE 3.5
Trend in Prevalence of Inter-Organizational Project Ventures among SMEs 2006 - 2009[12]

Sector	% of SMEs that engages in inter-org. project ventures	% of SMEs that engages in any form of inter-org. relations	Proportion of project ventures among inter-org. relations general	Av. number of project ventures per SME
Manufacturing	-4%	6%	-13%	15%
Construction	-3%	-6%	-2%	-6%
Trade and repair	-1%	-5%	-1%	224%
Hotels and Catering	-15%	-28%	-22%	-5%
Transport and Communication	1%	-7%	6%	60%
Financial services	0%	7%	-4%	55%
Business services	-10%	-3%	-16%	1%
Other services	-3%	-3%	-7%	283%
Total	**-5%**	**-5%**	**-8%**	**40%**

One of the irrefutable findings from Table 3.5 concerns the drop in the number of SMEs that engage in inter-organizational project ventures. More specifically, Table 3.5 demonstrates that the total percentage of SMEs that engaged in one or more IOPVs decreased with 5%-points. With the exception of Transport and Communication, this

[12] All values in the first three columns present percentage-points, i.e. the arithmetic difference between the percentages per cell between the two time points.

decrease is witnessed in all industries, with Business Services (-10%-points) and Hotels and Catering (-15%-points) noting decreases in the double digits. A similar trend is witnessed in the percentage of firms that engages in any form of inter-organizational collaboration, which for all SMEs comes to an average decrease of 5%-points. Controlling for this reduction in the number of firms that engages in any form of collaboration, still the number of organizations that participated in project ventures dropped: the relative proportion of project ventures among all inter-organizational collaborations diminished by 8%-points from 2006 to 2009. Again, Hotels and Catering (-22%-points) and Business Services (-16%-points) demonstrate the sharpest decreases.

Countering this overall trend, however, Table 3.5 at the same time indicates that those firms that do engage in IOPVs, do so in many more at a time. In fact, on average, SMEs that engaged in IOPVs held on average 40% more of them. With the exception of Hotels and Catering (-5%) and Construction (-6%), SMEs that do engage in such project ventures report increases in the number of IOPVs they engage in per firm. The above seems to indicate that between 2006 and 2009, the percentage of SMEs that engaged in IOPVs decreased, both absolute, and relative to the overall decreasing trend in inter-organizational collaborations, whereas, on the other hand, the average number of project ventures per SME that engaged in them increased.

When one combines these two dynamics in one number by looking at the total number of IOPVs in the population (by multiplying the number of firms who have them by the average amount of IOPVs per firm for both 2006 and 2009), the somewhat startling finding is that this number stayed almost exactly the same in 2006 and 2009 (if all project ventures in the economy were to be equally distributed over all SMEs, a given firm had 0.42 IOPVs in 2006, compared to 0.41 in 2009).[13] In other words, the drop in the amount of firms that engages in IOPVs is almost fully off-set by the increase in the number of IOPVs per firm, whereby their total prevalence stayed practically identical.

One possible argument that might be helpful in explaining why the above trend occurs lies in the main motivation that firms have to engage in IOPVs. Table 3.6 demonstrates these main motivations for 2006 and 2009. On the basis of this table, it seems that between 2006 and 2009 firms increasingly engaged in IOPVs in order to make a specific product (an increase of 8.7%-points), deliver a specific service (+ 4.9%-points) or to enhance the production process (+ 0.5%-point). This goes at the expense of engaging in IOPVs in order to do new or innovative things, like exploring a new market (-11.5%-points) or developing a new production technology (-2.9%-points). It thus seems that IOPVs are increasingly motivated by relatively safe exploitation of existing options, at the expense of more risky exploration of new ones. I will return to this finding later.

[13] The calculation is straightforward. In 2006, 16% of SMEs engaged in an inter-organizational project venture, and these firms had 2.63 of them on average (0.16 * 2.63 ≈ 0.42). In 2009, only 11% of SMEs engaged in an inter-organizational project venture, but they had 3.69 on average (0.11 * 3.69 ≈ 0.41).

TABLE 3.6
Main motivation to engage in an Inter-Organizational Project Venture 2006 - 2009

	2006	*2009*
Making a specific product	16.7%	25.4%
Providing a specific service	44.3%	49.2%
Enhancing the production process	3.9%	4.6%
Developing new production technology	4.0%	1.1%
Exploring or entering a new market	18.9%	7.4%
Organizing an event	3.4%	1.3%
Other, namely	8.7%	3.6%
Unknown	0%	7.3%

3.4.2 Characteristics of Inter-Organizational Project Ventures

As mentioned, besides the prevalence of IOPVs, the other main focus of the present chapter concerns their main characteristics. I will present these in line with the theoretical dimensions and operationalisation described earlier as pertaining to time (duration), team (size), task (unique/repetitive) and embeddedness (prior ties). As these items were only posed in the second wave of data collection, I only report these data for T2 (2009).

The first dimension that I distinguished concerns the *duration* of IOPVs. As Table 3.7 demonstrates, more than half of all IOPVs has a duration of less than one year: in fact, the most prevalent duration categories are 1-6 months (19.6%) and 7-12 months (33.5%). Whereas most IOPVs thus seem to be of (extremely) short duration, one can also note a relatively large group (12.4%) that takes over 49 months. It thus seems to be the case that there is a quite large group of IOPVs of short duration, and a somewhat less big group of long duration, with relatively little in between (see Table 3.7).

TABLE 3.7
Duration of Inter-Organizational Project Ventures (2009)

Duration	Absolute %	Cumulative %
1-6 months	19.6%	19.6%
7-12 months	33.5%	53.1%
13-18 months	10.8%	64.0%
19-24 months	7.8%	71.8%
25-30 months	5.6%	77.3%
33-36 months	8.2%	85.5%
37-42 months	1.6%	87.1%
37-48 months	0.4%	87.6%
> 49 months	12.4%	100%
Total	100%	

With regard to the *size* of the IOPVs SMEs engage in, Table 3.8 demonstrates the following. First, it indicates that over half of all IOPVs include more than two firms. In other words, more than half of all IOPVs are multi-party systems, a feature which clearly distinguishes them from regular inter-firm alliances that almost exclusively concern dyadic relations between two organizations (Das & Teng, 2002; Jones et al., 1998). Second, Table 3.8 indicates that most industries have a more or less similar size build-up of the IOPVs that are found. One exception to this is Transport and Communication, which seems to include an exceptional number of quite large project ventures, 23.5% of all IOPVs in this industry comprise 15 organizations or more.

TABLE 3.8
Size of Inter-Organizational Project Ventures (2009)

	Number of participating organizations					
Sector	2	3	4	5-8	9-15	>15
Manufacturing	42.2%	25.0%	6.3%	15.6%	7.8%	3.1%
Construction	48.5%	27.3%	9.1%	7.1%	2.0%	6.1%
Trade and Repair	61.2%	9.7%	5.5%	6.7%	2.4%	14.5%
Hotels and Catering	37.9%	10.3%	10.3%	6.9%	20.7%	13.8%
Transport and Communication	38.2%	20.6%	5.9%	5.9%	5.9%	23.5%
Financial services	50.0%	10.7%	10.7%	14.3%	3.6%	10.7%
Business services	50.9%	23.5%	8.9%	8.9%	5.0%	2.8%
Other services	51.0%	11.8%	11.8%	13.7%	3.9%	7.8%
Total	**51.3%**	**19.1%**	**8.1%**	**9.0%**	**4.8%**	**7.8%**

With regard to the *task repetitiveness* of IOPVs, Table 3.9 strongly indicates the prevalence of repetitive tasks over unique ones. On average, the nature of the tasks the IOPVs in the sample execute is in 82.5% of cases characterised as repetitive. Perhaps surprisingly, this finding seems to apply to all industries. Only Business Services (in which 17.7% of tasks are unique) may be said to be slightly different from the overall average, but even here over 80% of the IOPVs reports to work on a repetitive task (see Table 3.9).

The final characteristic of the IOPVs that I studied, their embeddedness, was, as mentioned, operationalized as the degree to which the partners in the venture had worked together before (i.e. the existence of *prior ties*). Table 3.10 presents the findings in this regard. It demonstrates that, on average, a majority (slightly over 60%) of the IOPVs are characterised as having prior ties between the partners. With regard to industry differences, it seems that one-off, non-repeated project ventures are mostly found in the Financial Services (53.3%) and Other Services (50%) industries, whereas the highest degree of embeddedness of IOPVs is found in the Business Services industry

and Construction, in which 67% of the IOPVs are embedded in prior ties between the partnering firms (see Table 3.10).

TABLE 3.9
Task Repetitiveness of Inter-Organizational Project Ventures (2009)

	Nature of the primary task of the inter-organizational project venture		
Sector	Unique	Repetitive	Unknown
Manufacturing	13.4%	85.1%	1.5%
Construction	7.9%	90.1%	2.0%
Trade and Repair	10.2%	87.6%	2.3%
Hotels and Catering	10.3%	89.7%	0%
Transport and Communication	9.4%	87.5%	3.1%
Financial services	13.8%	86.2%	.0%
Business services	17.7%	80.9%	1.4%
Other services	7.4%	92.6%	0%
Total	**13.3%**	**85.2%**	**1.5%**

TABLE 3.10
Embeddedness of Inter-Organizational Project Ventures (2009)

	Prior Ties between the Organizations collaborating in Project Venture		
Sector	Present	Absent	Unknown
Manufacturing	55.2%	43.3%	1.5%
Construction	67.0%	33.0%	0%
Trade and Repair	55.4%	43.5%	1.1%
Hotels and Catering	51.7%	48.3%	0%
Transport and Communication	57.6%	42.4%	0%
Financial services	46.7%	53.3%	0%
Business services	67.1%	32.9%	0%
Other services	50.0%	50.0%	0%
Total	**60.1%**	**39.5%**	**0.4%**

3.5 Discussion and Implications

On the basis of these findings, a number of conclusions can be drawn with regard to the prevalence and nature of IOPVs.

A first conclusion pertains to their prevalence. My major finding is that the total number of IOPVs among SMEs in the Netherlands was relatively high and stayed remarkably stable between 2006 and 2009. Below this stable surface, however, one can see that this stability is actually the result of two contrasting dynamics. Specifically, the results indicate that one should distinguish between two forms of prevalence: the number of firms that engages in IOPVs, and for those who do, the number of IOPVs they engage in. With regard to the former, I find that fewer organizations engaged in IOPVs in 2009 than in 2006. Countering much contemporary writing, IOPVs thus seem to be undertaken by fewer organizations, not more. This trend was witnessed along almost all industries, and held when I controlled for the negative trend in inter-organizational collaborations of all kinds. Although it is hard to exactly pinpoint what causes this trend, one possible reason that might account for this might be found in the findings concerning the main motivation to engage in IOPVs. As mentioned, between 2006 and 2009 firms increasingly engaged in IOPVs with a focus on stable economic activities, at the expense of engaging in them for reasons of innovation (Table 6). Given that for so many industries innovation is becoming increasingly important, this might partly account for why fewer organizations engage in them.

With regard to the latter kind of prevalence (the amount of IOPVs), one sees among the group of organizations that does engage in IOPVs an increase in the number of IOPVs per firm in 2009 relative to 2006. As a result, IOPVs seem to be becoming increasingly densely concentrated: fewer organizations engage in them, but those who do, do so more. The main conclusion with regard to the prevalence of IOPVs is that when the dynamics are combined, their overall prevalence is stable, and that they account for a significant portion of economic activity. This finding, regarding the importance of *inter-organizational* projects, ties into the more broadly witnessed trend that we are moving into a networked economy, in which the boundaries between organizations are increasingly being blurred (Sinha & Van de Ven, 2005), and projects are undertaken by multiple organizations (Maurer, 2010). Moreover, this finding, in my view, goes some way in legitimizing the recent research attention to IOPVs (Söderlund, 2004a) by demonstrating that they are in fact an empirically "real" phenomenon. This is important, as it establishes a link between our recent theorizing and the current developments in project organization practice. Given the fact that the research attention to IOPVs might be increasing, but is still markedly small in an absolute sense, I would on the basis of these findings call for future research to grant more explicit attention to inter-organizational forms of project organization.

Moreover, the findings point to an important managerial implication; because a clear finding of the study is that there is specialization taking place (among the group of organizations that engages in IOPVs the amount of concurrent inter-firm projects is

rapidly increasing), this by default means that these kinds of organizations need to balance project portfolios that are increasing in size and complexity. Whereas the successful execution of one project can already be a challenge, the challenge of successfully managing and executing multiple simultaneous projects with different partners can be even more of an ordeal (Wassmer, 2010). There is, in other words, an increasing need for these organizations to engage in *project portfolio management* (e.g. Gerwin & Barrowman, 2002). Although research on project portfolios goes back to seminal works as early as Gareis (1989), Engwall & Jerbrant (2003) recently mentioned that our knowledge of the complexities of multi-project portfolio management is still scarce. Moreover, our predominant knowledge of project portfolios pertains to managing a bundle of in-house projects, rather than inter-organizational projects. the empirical results thus give a strong impetus for future research to more closely study the added complexity involved in managing a portfolio of simultaneous projects with different partners, and for organizations that are confronted with growing project portfolios to resolve this complexity, by actively creating overlap and interaction in their project portfolio and manage these by formal tools (see Gerwin & Barrowman, 2002).

The second major conclusion that I draw concerns the *nature* of IOPVs. The results imply, amongst others, that their main characteristics concern the fact that they have a relatively short longevity, as the majority of project ventures has a duration of less than one year, and that most of them concern multi-party systems, including three or more partnering organizations. The literature on multi-partner alliances and consortia (e.g. Das & Teng, 2002; Lavie et al., 2007) proposes that the dynamics involved in collaborations of three or more legally independent parties are fundamentally different from those found in dyadic relation between just two. Das & Teng (2002), for instance, suggest that in multi-partner collaborations social exchange is generalized rather than direct, relying on generalized (rather than direct) reciprocity, and social sanctions and macro cultures (rather than formal contracts) in order to be successfully managed. Lavie et al. (2007) propose that the multilateral nature of collaboration in multi-partner collaborations asks for more complex governance, and that in contrast to dyadic collaborations, parties in such collaborations are more likely to receive different returns from participation. These findings are well in line with what is generally written in the field of temporary and project-based organization (Janowicz-Panjaitan et al., 2009; Sydow et al., 2004).

Somewhat less in line with conventional wisdom, however, are the findings with regard to the task uniqueness and social embeddedness of IOPVs. More specifically, I found that far most IOPVs are routine, i.e. they solve repetitive tasks, and they are embedded in prior ties between the partnering firms. This deviates strongly from how some have framed the ideal type temporary organizational venture as in most senses unique, solving one-off tasks between relative strangers (Goodman & Goodman, 1976; Meyerson et al., 1996). In addition, it indicates that whereas the flexibility to frequently change partners has been forwarded as one of the main advantages of inter-

organizational projects over more stable forms of collaboration (Schwab & Miner, 2008), firms seem to only make use of this opportunity to a limited extent. Rather, the repetitiveness of IOPVs I find (both with regard to their task and their partner choice) underlines the importance of Brady & Davies' call to take seriously the possibility that many organizations undertake similar project ventures over time, in which tasks and partner choice stay constant over multiple projects. As such, these findings draw attention to the possibility that many IOPVs are in fact embedded in what Sydow & Staber (2002) have deemed "latent networks", in which inter-organizational ties between firms are dormant for some of the time, but are then routinely activated in order to accomplish a specific project or task. This implies quite a different nature of project-based organization than the aforementioned work which has tended to stress the unique, one-of-a-kind nature of projects as given. Moreover, it has implications for project portfolio management as well, since conducting tasks with known partners enables the choice for informal governance (e.g. trust) over formal governance mechanisms (e.g. extensive contracting) (Das & Teng, 1998).

This finding also has important implications for current theory development, especially in the rapidly growing terrain of *project-based learning.* Project-based learning is generally referred to as encompassing the creation and acquisition of knowledge within temporary project ventures, and the codification and transfer of this knowledge to an enduring environment (Prencipe & Tell, 2001; Scarbrough et al., 2004b). Extant research has suggested that whereas projects are very suitable for *creating* knowledge in the context of its application (Gann & Salter, 2000; Hobday, 2000; Grabher, 2004a), their ephemeral nature and singularity inhibit the *sedimentation* of knowledge, because when the project dissolves and participants move on, the created knowledge is likely to disperse (Cacciatori, 2008; Grabher, 2004a; Ibert, 2004). My results imply that this latter point might be conceptually reconsidered. In fact, given the degree of social embeddedness of IOPVs in prior ties with the project partners, and the predominantly routine tasks they appear to solve, it seems likely that, conceptually at least, most IOPVs do grant opportunities for longer-term knowledge sedimentation. Through their project task stability, most IOPVs seem to require roughly the same set of capabilities and routines for their repeated execution (Brady & Davies, 2004), and through the prior ties between partners, they provide the ability to develop partner-specific knowledge in the form of transactive memory systems (Schwab & Miner, 2008). Therefore, it is likely that many organizations engaging in IOPVs should have an opportunity to develop "economies of repetition" and "project capabilities" (Brady & Davies, 2004). Both are fostered by the undertaking of multiple similar projects with the same partners over time, as appears to be the case in most IOPVs. In principle, it is likely that as the actors in such IOPVs develop project capabilities and partner-specific knowledge, lessons are more easily transferred from project to project and from project to organization.

The changing perspective on the nature of IOPVs that comes from the empirical findings also has important implications for the practice of project management. For one, since most IOPVs appear to be routinely executed by organizations that have a history of

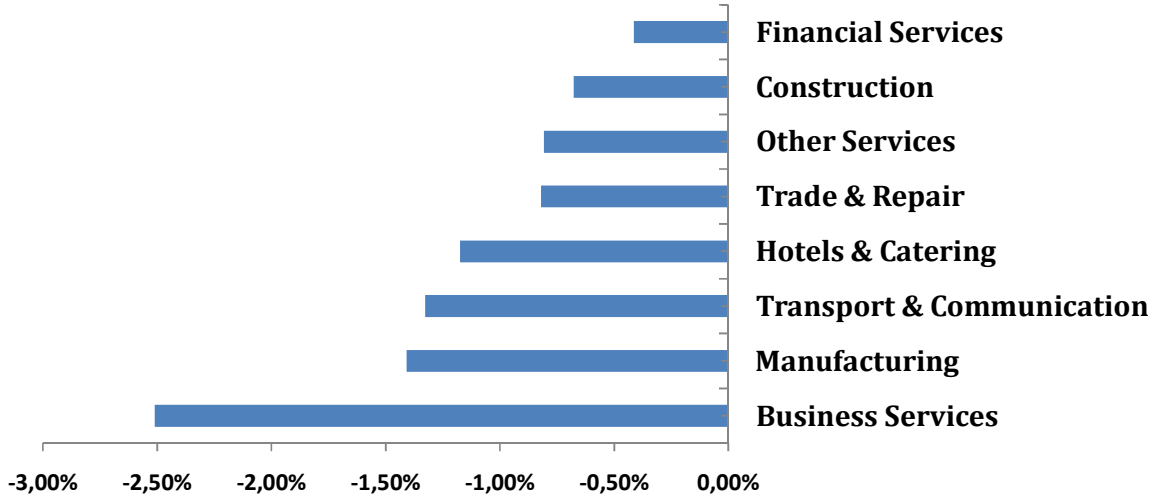
working together on prior projects, project management in such ventures should shift emphasis to the management of long-term relations between the partnering organizations, from a pre-eminent focus on ad hoc contracts specific to one project (Dahlgren & Söderlund, 2001). Moreover, taking into account the remarks above about the nature of project-based learning, there are important implications with regard to *project knowledge management.* Knowledge management has been recognized as being becoming increasingly important for the success of project ventures (Prencipe & Tell, 2001). With the apparent opportunities for project-based learning from IOPVs mentioned above, the management of such ventures should place a strong emphasis on seizing these opportunities by facilitating knowledge transfer by putting in place procedures and codification mechanisms for capturing developed knowledge (Prencipe & Tell, 2001), and the ongoing lowering of learning boundaries (Scarbrough et al., 2004b).

3.6 Limitations and Future Research Directions

Even though I stand by the above conclusions, there are also a number of limitations to the present study. First and fore mostly, although the data is extensive in some respects and strongly indicative of trends in the prevalence of IOPVs, the results do not allow to statistically isolate what causes this trend. One explanation that readily comes to mind is the global economic downturn that set in between 2006 and 2009. Although I cannot on the basis of the current data statistically verify whether the crisis is a main cause for the findings with regard to prevalence, there are some indications that point that way. Figure 3.2 demonstrates the impact of the economic crisis on the Dutch economy per industry, based on data available from Statistics Netherlands.

When comparing the sectors most affected by the crisis to those sectors in which I found the largest decrease in the number of organizations that engaged in IOPVs between 2006 and 2009, one sees a rather large overlap. More specifically, we see that those sectors which noted the largest decrease in the prevalence of firms with IOPVs, namely Hotels and Catering (-15%-points), Business Services (-10%-points), and Manufacturing (-4%-points), are also among those sectors that were affected most by the economic crisis (respectively rank scores 4, 1, and 2 of sectors most affected by the crisis, see Figure 3.2). The upshot of this is that even *despite* the economic downturn, the prevalence of IOPVs remained stable between 2006 and 2009. I would recommend future research to explicitly study the effects of economic uncertainty and crisis on IOPVs. In addition, by measuring again the prevalence of inter-organizational project venturing in, say 2012, future research could give more insight in the longer-term trend in prevalence of IOPVs, and see how the economic crisis might have influenced this trend. Nevertheless, the results already give a strong impetus for future research in project management to more elaborately study inter-organizational (rather than in-house) projects, especially with regard to the dynamics involved in managing portfolios consisting of simultaneous projects with diverse partners.

FIGURE 3.2
Drop in Employment between September 2008 and June 2009 in the Netherlands [14]



A second limitation concerns the fact that I only have data on the characteristics of IOPVs for 2009. As a consequence, whereas I could track a trend in the prevalence of IOPVs over time, the description of their main characteristics was solely static. Although the empirical description of IOPVs at one point in time is valuable in itself, additional information over time would be even more informative.

A third limitation is my sample. With access to Dutch SMEs in the period 2006-2009, one cannot statistically verify that the findings are generalizable to all IOPVs everywhere. Nevertheless, I would maintain that there are strong merits in this sample, as it is, for one, sufficiently large to be representative of the population that I studied across all major industries in the Dutch economy.

[14] Based on data from Statistics Netherlands, http://statline.cbs.nl/statweb/.
The negative impact of the credit crunch on the real economy in the Netherlands set in in the second half of 2008. To calculate the impact of the crisis, I therefore calculated the drop in employment (in percentages) for each sector between September 2008 (3d quarter) and June 2009 (2d quarter). The latter time point roughly corresponds to the period in which I collected the data. Regardless of the current economic crisis, there have been large differences between sectors in terms of employment growth over the last couple of years. Not controlling for such trends would lead to an underestimation of the impact of the crisis in some sectors and overestimation in others. Therefore, I calculated the employment growth for all sectors in the three quarters preceding the economic crisis as well. The impact of the crisis is calculated as the difference between the employment growth before and during the crisis.

3.7 Conclusion

The present chapter is the first to present large scale data from a repeated trend survey on the prevalence and characteristics of inter-organizational project ventures. The overall picture indicates that IOPVs as a whole concern a substantial part of inter-organizational relations between organizations and the economy more broadly, and that their overall prevalence is stable, even despite the economic crisis. This finding offers, in my view, a legitimization of the emerging field of research that studies this particular type of project organization, and calls to step up current research efforts toward IOPVs. My findings offer the possibility to also look beneath this surface at the dynamics at play, and demonstrates two opposing trends. In fact, the number of firms that engages in IOPVs seems to be decreasing, whereas the number of projects among the group who do is increasing. Thereby, IOPVs are becoming increasingly densely concentrated amongst smaller numbers of organizations. By implication, those organizations that engage in IOPVs manage larger and more complex portfolios of projects. This gives a strong empirical impetus for the intensified study of the management of multiple simultaneous projects with diverse external project partners.

Moreover, the data indicates that the majority of IOPVs solve repetitive tasks, executed in socially embedded collaborations, between multiple partners rather than dyads. This opens up possibilities to reconsider the nature of project-based learning, which thus far has predominantly been premised on the conventional notion that projects are necessarily unique, stand-alone entities, and has important implications with regard to coordination and governance.

While the present chapter thus gave some strong indications about the prevalence of IOPVs over time, it leaves open the question of what causes this trend, in other words: where do IOPVs come from?

Chapter 4

Where do Inter-Organizational Project Ventures come from?[15]

4.1 Introduction

Despite the host of scholarly attention to project-based forms of organization (Chapter 2), and its significant prevalence in multiple industries (Chapter 3) we know relatively little of why organizations are increasingly engaging in IOPVs (Söderlund, 2004b). What we do know is primarily based on anecdotal and case study evidence, which was a natural first step for researchers interested in starting to answer this question (Bakker, 2010). The present chapter attempts to bring systematic large sample data to bear on the question of where IOPVs come from. This is an important question, because from a learning perspective, IOPVs might be construed as extremely risky endeavours.

For one, many projects fail (Turner et al., 2009). This can be a direct result of budget or time overrun, or lack of quality of the desired product or service being delivered. Moreover, however, IOPVs also yield considerable learning obstacles. In contrast to enduring organizations, inter-organizational projects revolve around a temporary nature of collaboration (Grabher, 2002). This means that they have an ex ante defined limited period of interaction between members, before the project is disbanded and ceases to exist (Bakker, 2010; Jones & Lichtenstein, 2008). This discontinuous logic strongly challenges the supposedly systematic process of how organizational operating routines slowly evolve by learning through continuous performance feedbacks (Zollo & Winter 2002). In addition, IOPVs face considerable challenges in the sedimentation of knowledge, because when the project dissolves and participants move on, the created knowledge is likely to disperse (Grabher, 2004; Ibert, 2004). From this learning perspective, the conditions under which organizations are more likely to choose a high risk, discontinuous learning strategy through the formation of IOPVs are crucial to understand.

Therefore, based on an empirical analysis of data collected among 1,725 SMEs and the industries in which they are embedded, I aim to answer the following research question: which organizational and industry level antecedents determine SME participation in inter-organizational project ventures?

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[15] This chapter is based on:
Bakker, R.M., Knoben, J. & Oerlemans, L.A.G. The Organizational and Industry Antecedents of Inter-Organizational Project Venture Participation. Manuscript under review.

While this chapter, in line with the rest of this dissertation, is written in the first person, this research was thus conducted in cooperation with Joris Knoben and Leon Oerlemans.

The scholarly relevance of this research question to some extent lies in IOPVs being a quite distinct form of organization that warrants more systematic study. Specifically, IOPVs are characterized by two under-researched features that, especially in combination, set them apart from other types of inter-firm collaboration and make them a highly interesting research phenomenon.

First, unlike many stable collaborative relations which are open-ended in nature (such as most social relations and informal organizational ties), IOPVs are explicitly temporary. This "temporariness" means that there is an explicit and ex ante defined limited time of interaction between the collaborating partners after which the venture is disbanded (Grabher, 2002a; Jones & Lichtenstein, 2008); essentially, they are "built to fall apart" (cf. Greve et al., 2010). It has been proposed that knowing up front that a collaboration will be temporary has important effects on intra-project dynamics (Saunders & Ahuja, 2006). For example, temporariness reduces a collaboration's shadow of the future, i.e. the length of time two parties expect to collaborate (Axelrod & Hamilton, 1981). On the one hand, available research suggests that shorter shadows of the future prevent stable collaboration to emerge because it raises opportunities for opportunism, knowing that other parties will not have an opportunity to reciprocate or retaliate later (Heide & Miner, 1992). On the other hand, it has been proposed that the temporary nature of IOPVs provides flexibility, i.e. the possibility for organizations to quickly and easily alternate between different projects and partners by shutting down some and starting others (Jones & Lichtenstein, 2008; Schwab & Miner, 2008).

Second, unlike in-house projects (Söderlund, 2004a), or strategic alliances that are usually dyadic (Lavie et al., 2007), chapter 3 already demonstrated that IOPVs often include multiple partners, i.e. more than two collaborating organizations (Bakker et al., in press). The literature on multi-partner alliances and consortia (e.g. Das & Teng, 2002; Lavie et al., 2007) proposes that the dynamics involved in collaborations of three or more legally independent parties are fundamentally different from those found in dyadic relation between just two. Das & Teng (2002), for instance, suggest that in multi-partner collaborations social exchange is generalized rather than direct, relying on generalized (rather than direct) reciprocity, and social sanctions and macro cultures (rather than formal contracts) in order to be successfully managed. Lavie et al. (2007) propose that the multilateral nature of collaboration in multi-partner collaborations asks for more complex governance, and that in contrast to dyadic collaborations, parties in such collaborations are more likely to receive different returns from participation. These two dimensions of IOPVs ("temporariness" and "multi-partnerness") set IOPVs apart from other types of inter-firm collaboration such as strategic alliances, but are organizational dimensions that are ill understood thus far.

Besides in the organizational form studied, the relevance of answering the above research question also lies in its potential contributions to the literatures on project-based organization and inter-firm collaboration. Specifically, by answering the above research question, the present chapter aims to make at least three.

First, I extend the literature on the relative effects of firm and industry antecedents of alliance formation to the domain of project-based organization. I demonstrate, in contrast to previous work which has studied either firm or industry antecedents, that IOPV participation is a function of both firm and industry variables, and that models including both levels of analysis have superior explanatory power over models that include either/or. This viewpoint contributes to the literature on Project-Based Organizations (PBOs), which has thus far mostly been concerned with firm level variables, such as structural design (Galbraith, 1971; Hobday, 2000), strategic resources (Shenhar, 2001a) and product innovation (Gann & Salter, 2000). By demonstrating that industry characteristics are significant predictors of project participation as well, this chapter opens up this body of literature to extend its analytic scope and study between-industry variation.

A second contribution of the present chapter is to the literature on alliance portfolios (for an overview, see Wassmer, 2010). I empirically demonstrate that participating in one collaborative venture has a different constellation of antecedents than participating in multiple collaborations concurrently: participation in portfolios of, in my case, IOPVs, is a function of a different constellation of antecedents than participation in one individual IOPV. This finding suggests that to go out and collaborate in one IOPV is different from the decision to add additional IOPVs to the portfolio when that initial step has been taken. This underscores and extends one of the central premises of the alliance portfolio literature: to enter into a single alliance is qualitatively different from entering into a portfolio of multiple alliances (see Duysters & Lokshin, in press; Ozcan and Eisenhardt, 2009).

A third contribution of the present chapter lies more broadly in an attempt to start to bridge the fields of inter-firm alliances and networks with that on projects and project management. Even while IOPVs are perhaps most directly a specific kind of project (Söderlund, 2004a), they are equally a specific kind of inter-firm relation (Jones & Lichtenstein, 2008). Whereas both of these fields cover vast amounts of literature, they have evolved quite separately from one another (Bakker, 2010). By their nature, IOPVs seem to fall somewhere in between projects and inter-organizational networks (Sydow & Staber, 2002) and provide a natural empirical setting for insights from both fields to interact. To the alliances literature, IOPVs, by virtue of their temporariness, contribute an explicit focus on the temporal dynamics involved in inter-firm collaboration. To the projects literature, IOPVs, by virtue of their multi-partnerness, contribute an explicit focus on the inter-firm dynamics involved in project work. The empirical substantiation and theoretical elaboration of these ideas will form the main body of the remainder of this chapter.

4.2 Theory and Hypotheses

To explain IOPV participation by SMEs, there are two likely streams of theories that can be drawn upon; those that highlight firm characteristics (e.g. strategic choice and the

resource based view) and those that stress the role of the industry (e.g. population ecology theory and industrial economics, see Short et al., 2009). I discuss the likely variables that explain IOPV participation on both these levels below. I thereby extend the literature on firm and industry antecedents of alliance formation to the domain of project-based organization, and draw on both the alliance formation and project-based organization literatures to formulate hypotheses.

4.2.1 Firm-level Factors impacting Inter-Firm Project Venture Participation by SMEs

On the level of firm characteristics, prior research on new venturing and alliance formation has centred on the importance of *strategic resources* and *firm-specific uncertainty*. With regard to the former, Eisenhardt & Schoonhoven (1996: 138) have stated that "resources provide both the need and the opportunities for alliance formation". Inter-organizational collaborations, such as IOPVs, are seen as ways to gain access to resources (Teng, 2007). The most important resources are valuable, rare, imperfectly imitable and non-substitutable, and valuable resources that adhere to these criteria (like knowledge) generally need an organizational vehicle like an inter-organizational collaborative structure in order to be successfully transferred (Sakakibara, 2002). From this logic, important drivers of inter-firm collaboration are resource search behaviour, induced by firms having a resource intensive innovative strategy, and resource surpluses, which can help to find and attract partners (Eisenhardt & Schoonhoven, 1996). This role of resources is captured in Hypotheses 1, 2 and 3 below, and applied to the specific context of SMEs and IOPV participation.

Scope of Innovative Activities. Firms innovate in an effort to strengthen or maintain their competitive position. I expect that SMEs with a broader scope of innovative activity, which means they engage in different types of innovation, are more likely to encounter the boundaries of their internal knowledge base (Teng, 2007), as by nature different innovative activities draw more heavily on internal firm resources (Eisenhardt & Schoonhoven, 1996). IOPVs specifically seem excellent organizational devices to cross the boundaries of a firm's knowledge base, especially as they relate to innovation. As mentioned, IOPVs are characterized by being temporary and multi-party. The temporary nature of inter-firm projects grants SMEs with flexible and pointed access to resources held by other organizations (Duysters & De Man, 2003). Moreover, being temporary breeds a strong task focus and a break from normal routines, and prevents lock-in effects of partners working together over extended periods of time that can stifle innovation (Grabher, 2002a; Skilton & Dooley, 2010). The temporariness of IOPVs thus grants a possibility of flexible and low-cost experimentation with new designs which promotes "excellent preconditions for creating new knowledge" (Sydow et al., 2004: 1481). Moreover, because they combine multiple partners, there are opportunities for new and innovative knowledge development through knowledge integration and combination between diverse skills and disciplines (Grabher, 2002a; Hobday, 2000).

Whitley (2006) noted that by granting temporary membership of multiple networks, alliances and partnerships, IOPVs are able to produce radical innovative resources for the organizations involved.

IOPVs thus seem excellent ways for participating SMEs to access, internalize, and co-develop critical innovative resources that are unlikely to be held internally by a single SME. I, therefore, expect that SMEs with a broader spectrum of innovative activities are more likely to participate in IOPVs than SMEs with a narrower (or no) spectrum of innovative activity. Hypothesis 1 follows from this:

Hypothesis 1: *SMEs with a broader scope of innovative activities are more likely to participate in inter-organizational project ventures.*

In contrast to few resources, SMEs can also have many. A resource surplus can induce inter-firm cooperation, as it allows organizations to "experiment with new strategies and innovative projects that might not be approved in a more resource-constrained environment" (Nohria & Gulati, 1996: 1245-1246). For SMEs, which are by definition constrained on their human resource base, human resources are among the most critical. I will in the following distinguish between two dimensions of the human resource base of SMEs: its size and its efficiency.

Size of the Human Resource Base. Human resources need to be allocated to projects by the organizations that found them (Engwall, 2003). All things being equal, I expect IOPVs to have a higher likelihood of being founded by larger SMEs, as larger SMEs tend to have a larger pool of human capital with a wider variety of qualities that can be allocated to the project. From the focal organization's point of view, SMEs with larger resource pools likely have more freedom to experiment and allocate people to different kinds of projects than SMEs in which the human resource base is smaller (Cyert & March, 1963). Moreover, organizations with larger human resource pools tend to have more experienced management (Kogut & Zander, 1992). Therefore, SMEs with larger human resource bases are likely able to manage larger and more complex portfolios of IOPVs, which by virtue of their inclusion of multiple partners by themselves already require more complex governance structures than dyadic collaborations (Lavie et al., 2007).

Because IOPVs are multi-party entities, these ventures consist of other organizations that collaborate in the venture besides the focal organization. Also from the perspective of such potential inter-firm project collaborators, SMEs with larger human resource pools are likely considered to be a more attractive project partner than smaller SMEs. In general, larger size tends to legitimize organizations, "to the extent that large size is interpreted by stakeholders as an outcome of an organization's prior success and an indicator of future dependability" (Baum, 1996: 73). This is likely to make SMEs with larger human resource pools more favourable partners to engage in projects with than smaller SMEs. Since both from the focal organization's point of view as from the vantage

point of potential project partners, larger SMEs seem more likely to engage in IOPVs than smaller organizations, I expect that:

Hypothesis 2: *SMEs with a larger human resource base are more likely to participate in inter-organizational project ventures.*

Efficiency of the Human Resource Base. It is not only how many people an SME employs that is important, it is also important to consider what they do. Therefore, the efficiency of the human resource base is a third organizational factor that I take into account. Efficiency of the human resource base pertains to labour productivity, i.e. the economic value that is produced per employee of the SME. In general, one would expect that SMEs with a more efficient human resource base are better skilled at managing the deployment of human resources (Wiklund & Shepherd, 2003). This ability is in turn likely to make such SMEs attractive project partners, and I expect them to be better able to manage complex inter-firm projects than SMEs with a less efficient deployment of human resources.

Moreover, an efficient human resource base is more likely to produce resources that can be freely re-allocated than an inefficient human resource base. It is well known that projects rely on financial resources that need to be allocated by the organizations that manage them (Engwall, 2003; Whitley, 2006). As mentioned, experimentation through engaging in IOPVs is likely more acceptable when there is a larger pool of resources, because this buffers the risks involved in engaging in projects (Engwall & Jerbrant, 2003; Oerlemans & Pretorius, 2008). Therefore, it seems that in general, from a focal SME's point of view, an efficient human resource base, and the resources this is likely to open up, is likely to lead to more leeway to experiment, and therefore more opportunities to engage in IOPVs. The fact that such project ventures are temporary forms an additional buffer against risk, as resource allocations are not fixed for longer periods into the future in which an SME might not be in the same financial cash flow position.

Based on the above, I expect both from the focal SME's point of view as well as from the point of view of potential project partners that SMEs with a more efficient human resource base are more likely to engage in IOPVs than SMEs with a less efficient human resource base. Hypothesis 3 follows:

Hypothesis 3: *SMEs with a more efficient human resource base are more likely to participate in inter-organizational project ventures.*

Perceived Firm-Specific Uncertainty. Whereas resources can provide SMEs with opportunities to start or participate in IOPVs, uncertainty creates the conditions in which these opportunities can be leveraged (Koka et al., 2006). In the 1970s, increases in environmental uncertainty in the U.S. airline industry led to changes in organizational strategies from pricing strategies, the opening of new hubs, and changes in flight routes

(Koka et al., 2006: 724; Lang & Lockhart, 1990). Therefore, uncertainty is, as mentioned, a fourth important predictor of IOPV participation.

Organizations strive to reduce uncertainty by various structural arrangements, including inter-organizational collaboration (Beckman et al., 2004; Thompson, 1967). Inter-organizational collaboration can be an effective way to cope with uncertainty because it provides an opportunity to get access to otherwise external resources and share risks over multiple firms (Sakakiba, 2002; Teng, 2007). In this way, uncertainty creates the conditions for resources to be leveraged through inter-organizational collaborations. Extant literature has suggested distinguishing between two types of uncertainty: firm-specific uncertainty, i.e. the amount of uncertainty experienced by an individual organization, and uncertainty at the level of the industry (commonly referred to as market uncertainty), i.e. external uncertainty shared across a set of organizations (Beckman et al., 2004). The difference reflects the reality that even in times of economic crisis (high market uncertainty) some individual organizations can experience relatively low firm-specific uncertainty. Whereas firm-specific uncertainty is a feature of organizations, with market uncertainty we move to the level of the industry in which the organization is embedded (which will be discussed later).[16]

Uncertainty in general refers to the inability of individuals and organizations to predict future events (Milliken, 1987). As mentioned, a classic argument in organization theory concerns that organizations strive to reduce uncertainty by various structural arrangements (Beckman et al., 2004; Thompson, 1967). There are several reasons why IOPVs might be suitable reducers of firm-specific uncertainty for SMEs. One is that they provide SMEs with access to diverse knowledge and resources hosted with multiple partners (Whitley, 2006), while by virtue of being temporary not demanding long-term resource commitments or fixed costs (Duysters & De Man, 2003). In other words, they allow for low-cost experimentation and partnering flexibility (Schwab & Miner, 2008), in which "companies [..] may launch a variety of ventures [..] and may terminate unsuccessful ventures at low cost and little disturbance to the organizational sponsor" (Sydow et al., 2004: 1475). Moreover, they allow the SME to acquire knowledge swiftly, thereby helping it to deal quickly with its internal uncertainty (Duysters & De Man, 2003; Hobday, 2000). As Jones & Lichtenstein (2008) mention, SMEs that experience internal uncertainty need decoupling, which allows to flexibly initiate, reconfigure, or shut down activities. IOPVs, more so than in-house projects, provide this flexibility because resource bundles can be rented or exchanged rather than owned, and "can be reallocated cheaply and quickly to meet changing environmental demands" (Jones et al., 1997: 919).

[16] Beckman et al. (2004) predict that the two forms of uncertainty lead to different behavioural outcomes: where firm specific uncertainty leads organizations to participate in collaborations with new partners, market uncertainty leads organizations to participate in collaborations with existing partners. Because I cannot distinguish between projects with and without existing prior ties between the collaborating SMEs in the dependent variable, I will in the present chapter just make the point that as a bottom line, both forms of uncertainty lead to IOPV participation.

Based on the above, I expect the level of firm-specific uncertainty experienced by a focal SME to be positively related to IOPV participation. Hypothesis 4 follows:

Hypothesis 4*: SMEs experiencing higher levels of firm-specific uncertainty are more likely to participate in inter-organizational project ventures.*

4.2.2 Industry-level Factors impacting Inter-Firm Project Venture Participation by SMEs

As mentioned, the literature on the relative effects of firm and industry on new venturing and alliance formation has made a forceful claim that not only organizations, but also the specific industries in which organizations are embedded have profound effects on organizations' proclivity to participate in inter-firm collaborations (e.g. Stuart, 1998). As mentioned, perhaps one of the most elementary features of this wider context concerns the degree of market uncertainty in the specific industry in which the SMEs that participate in the project are embedded. In contrast to firm-specific uncertainty, market uncertainty pertains to the environment of organizations in an industry, not to individual firms which might operate in an industry with high market uncertainty, but still experience a relatively low level of firm-specific uncertainty (Beckman et al., 2004).

Market Uncertainty. Because, as mentioned, IOPVs seem to be particularly effective vehicles to reduce uncertainty, I expect uncertainty at the industry level (market uncertainty) to be positively related to IOPV participation rates. There are several arguments that suggest that IOPV participation might be related to market uncertainty. First, IOPVs are temporary, and therefore quick and flexible (Jones & Lichtenstein, 2008; Schwab & Miner, 2008) by which they grant the project partners swift access to knowledge and information so they can adapt quickly to rapidly changing (i.e. uncertain) circumstances (Duysters & De Man, 2003). By this same token, temporariness and the flexibility it brings hedges against the risk of "overembeddedness" (Uzzi, 1996). Overembeddedness can hurt organizations by making them vulnerable to environmental changes due to the limited diversity of information to which they have access (Zaheer et al., 2010). Moreover, because this type of generalized uncertainty is necessarily shared by a large group of organizations (although not necessarily all of them) there are quite likely many potential project partners around that equally want to flexibly engage in IOPVs to hedge risks across a larger group of organizations. Therefore, as is the case with firm-specific uncertainty, I expect market uncertainty to be positively related to IOPV participation by SMEs. This expectation is in line with the recent observations that project-based industries (such as R&D, construction and film) are generally also industries characterized by unparalleled levels of volatility (DeFillippi & Arthur, 1998; Jones & Lichtenstein, 2008).

Since market uncertainty is a relatively broad phenomenon, I follow Boyd (1990; Boyd et al., 1993), who proposed that environmental uncertainty can be specified into three key dimensions: munificence, dynamism, and complexity. Munificence indicates the abundance of resources in a firm's environment. Low munificence (i.e. scarcity) means

that there are relatively few resources in the environment. Munificence is, therefore, negatively related to market uncertainty meaning that higher levels of munificence (i.e. resource abundance) make for a less uncertain market (Boyd, 1990). Dynamism, or the level of instability in an environment, is an indicator of environmental volatility and is as such positively related to market uncertainty (Boyd et al., 1993). Complexity is a measure for inequalities among competitors, by looking at the number of firms in an industry, and their relative inequalities in market share. Market complexity has a curvilinear relation with uncertainty: both on a very highly concentrated market (with few and highly visible competitors that are easy to monitor) and on a market with low concentration (with perfect competition and firms with small market shares that cannot individually influence market outcomes), uncertainty is relatively low (Boyd, 1990). Uncertainty is high at moderate levels of complexity.

Based on the above arguments regarding market uncertainty, and how uncertainty relates to munificence (negative), dynamism (positive) and complexity (curvilinear), I expect the three dimensions of market uncertainty to influence IOPV participation by SMEs in the following ways:

Hypothesis 5*: SMEs embedded in industries with lower levels of munificence are more likely to participate in inter-organizational project ventures.*

Hypothesis 6*: SMEs embedded in industries with higher levels of dynamism are more likely to participate in inter-organizational project ventures.*

Hypothesis 7*: SMEs embedded in industries with moderate levels of complexity are more likely to participate in inter-organizational project ventures.*

4.3 Methods

4.3.1 Population and Sample

We examined IOPV participation by SMEs by collecting primary data from a sample of 1,725 SMEs in the Netherlands, and by collecting longitudinal secondary data from the Dutch bureau of Statistics and the LISA-database, the latter of which contains information on the number of jobs and the type of economic activities for all establishments in the Netherlands (see Knoben and Weterings, 2010).

The choice to explicitly study SMEs and the projects they were engaged in comes from my interest in *inter-organizational* project ventures (cf. Ferriani et al., 2009). Taking into account the fact that there are no publicly available datasets that contain IOPV announcements (like there is, for instance, the SDC database for alliances, see Schilling, 2009) I collected data on IOPV participation from their source: namely the SMEs that participate in them. A telephone survey amongst 2,000 SMEs in the Netherlands was executed by a joint effort by the professional research institute *EIM Business and Policy Research* and the author. The survey enquired into the number of IOPVs the

organizations were engaged in, the characteristics of those ventures, and characteristics of the organizations.

The population of which firms could be drawn consisted of all SMEs in the Netherlands. Based on population information on the sectors and size classes of these firms, *EIM* maintains a panel of 2,000 organizations that is contacted yearly through a stratified random sample. In my case, the 2009 wave of data collection among the 2,000 SMEs in the sample yielded a response rate of 99% (N=1,987) which were successfully interviewed. This response is high for this type of research, and is a direct consequence of the telephone survey approach and the fact that many of the firms in the panel have a long history of working with *EIM*. Of the 1,987 organizations with which an interview was completed successfully, 1,725 organizations completed all survey items. The drop from 1,987 to 1,725 organizations was mainly caused by organizations not answering the items on financial performance. A non-response analysis demonstrated that this group was not significantly different from the group that did provide this information.[17]

A unique feature of the sample is that it covers a large cross-section of industries, which allows studying inter-industry variation and its effects on collaboration in the form of IOPVs. Table 4.1 presents a breakdown of the survey sample of SMEs.

In addition to this, I had access to additional data from Statistics Netherlands and the LISA database, by which I for each of the major industries in the Dutch economy obtained longitudinal data on industry gross profits and employment to measure the industry variables I was interested in (munificence, dynamism, and complexity).

TABLE 4.1
Breakdown of Survey Response

Industry	*N of SMEs*
Manufacturing	235
Construction	251
Trade and Repair	297
Hotels and Catering	147
Transport and Communication	156
Financial services	155
Business services	321
Other services	163
Total	**1725**

[17] Not reported because of space constraints, but available from the author.

4.3.2 Dependent Variable

Inter-Organizational Project Venture Participation. IOPV participation was studied by enquiring in the telephone survey after whether, and if yes, how many, IOPVs a given SME was currently engaged in. In particular, the dependent variable was assessed by two measures: First, every participating SME was asked whether it currently engaged in IOPVs, defined as being temporary inter-organizational project ventures in which the participating firms had explicitly agreed ex ante that the duration of the collaboration would be limited (either by a date or the fulfilment of the project) and which was characterized by an interdependent execution of tasks with the other partners. Second, for those who did, I enquired after how many of such IOPVs they were currently engaged in. I combined these two variables into one count variable of IOPV participation, where the value indicated the number of IOPVs in which an SME engages (with 0 meaning that a particular firm is engaged in no inter-organizational project ventures).

4.3.3 Independent Variables – Firm

Scope of Innovative Activities. The scope of the innovative activities of an SME was measured by summing the scores of three binary items for which respondents indicated whether their firm was engaged in 1) product and/or service innovation, 2) market innovation, and 3) process innovation. This resulted in a variable ranging between zero (no innovative scope) and three (broad innovative scope). As one cannot use Cronbach's Alpha to assess the reliability of scales consisting of dummy variables, I looked at the correlations between the dummy's (Spearman's rho). This demonstrates that all of the items correlate to a sufficient extent for them to be summed into one measure (rho's ranging between .364 and .716, all statistically significant at $p < .01$).

Size of the Human Resources Base. The size of the human resource base was measured by the amount of employees on the SME's payroll. Because this measurement resulted in a distribution that was highly skewed it was log-transformed before utilization in my analyses.

Efficiency of the Human Resource Base. The efficiency of the human resource base was measured by dividing an SME's yearly firm sales by the number of employees on their payroll, which resulted in what is essentially a measure of earning capacity per employee. Both the sales and the number of employees were obtained for the year prior to the survey (2008). Because this measurement resulted in a distribution that was highly skewed it was log-transformed before utilization in the analyses.

Perceived Firm-specific Uncertainty. To measure perceived firm-specific uncertainty, respondents were presented with five statements to which they were asked to reply on a three point scale ranging from "not applicable to my organization" to "highly applicable to my organization". Moreover, one statement was presented to which the respondent was asked to reply on a five point Likert scale. I conducted an exploratory factor analysis on these six items to check whether they indeed represented the same latent factor. The results thereof, as well as the exact wording of the items are presented

in Table 4.2. This table clearly shows that the six items all converge into a single underlying factor. Moreover, the reliability of the resulting scale is high (Cronbach's alpha .85). Based on these results, a single variable was created out of the six aforementioned items. In this variable, the six items were weighed with their factor loadings and the resulting variable was standardized.

TABLE 4.2
Factor Analysis for Perceived Firm-Specific Uncertainty

	Factor loadings
The profitability of the firm is decreasing	0.823
The total sales of the firm are decreasing	0.805
The prospects for the coming months are bleak	0.788
Finding funding for the daily operations of the firm is becoming more difficult	0.756
Finding funding for investments is becoming more difficult	0.719
I expect the continuity of the firm to be at risk in the coming year	0.611
Factor Information	
Extraction Method	Principal Component Analysis
KMO-measure	0.776
Significance of solution	0.000
% of total variance explained	58.83%
Cronbach's alpha	0.847

4.3.4 Independent Variables – Industry

The measures of market uncertainty are based on the framework proposed by Boyd (1990) who, in turn, based it on the work of Dess & Beard (1984). Following their work, I came to single score indicators of the three dimensions of market uncertainty, munificence, dynamism, and complexity.

Munificence. As mentioned, munificence is a measure of the abundance of resources in the environment of a firm, where greater scarcity of resources, i.e. lower levels of munificence, implies greater uncertainty. Following Boyd (1990), munificence was measured for each industry as the regression-coefficient resulting from a regression analysis of time against industry gross-profits for the five years prior to the year of the survey (2003-2008) divided by the mean value of industry gross-profits over those five years. The required data were obtained from Statistics Netherlands.

Dynamism. Dynamism is a measure of the volatility of the environment of an organization, where higher levels of volatility imply higher levels of uncertainty. Following Boyd (1990), dynamism was measured by the standard error of the coefficient resulting from a regression analysis of time against industry gross-profits for

the five years prior to the year of the survey (2003-2008) divided by the mean value of industry gross-profits over those five years. The required data were obtained from Statistics Netherlands.

Complexity. Two elements of the complexity of an industry are usually distinguished in the literature, namely the number of firms and their relative inequalities in market share (Boyd, 1990). The Herfindahl-index captures both of these elements in one measurement. This index is calculated by taking the sum of the squared market shares of each individual firm in an industry and, therefore, ranges between zero and one. A score of 1 represents a perfect monopoly and a value approaching zero represents perfect competition, the latter implying a higher level of complexity. A larger number of firms will push the value towards zero, whereas increasing inequalities in market share pushes it towards one.

Individual market shares of SMEs are not commonly publicly available. Therefore, I based the calculation of the Herfindahl-index on employment shares rather than on market shares in terms of sales. I obtained employment figures for each individual SME from the LISA-database (see Knoben & Weterings, 2010). On the basis of this information, Herfindahl-indices based on employment shares were calculated for all industries in the sample. Since the hypotheses predicted an inverted U-shape effect between complexity and inter-firm project venture participation, I included both the linear and squared concentration term. In order to prevent multicollinearity between the main effect and the squared term, I mean centered the complexity variable before calculating the squared term. Moreover, I performed several robustness checks to make sure multicollinearity did not influence the results (see robustness tests section below).

4.3.5 Control Variables

Besides these major variables of interest, I included the following variables as controls.

Entrepreneurial Orientation*.* One would expect that by very nature, more entrepreneurial SMEs would be more likely to participate in entrepreneurial activities such as setting up IOPVs (Teng, 2007). I therefore control for a given SME's entrepreneurial orientation. In order to assess this variable, respondents were asked to indicate whether the main goal of their company was growth versus being independent and content with continuity. Based on the responses I created a dummy variable that took the value zero if the company had an entrepreneurial orientation towards expansion and zero if it focused on continuity instead.

Subsidiary Status. An SME that is the subsidiary of a larger organization can potentially participate relatively easily in projects that are run (and financed) by their parent organization(s). In order to filter out this potential effect, I controlled for SMEs' subsidiary status. I measured this variable by asking respondents whether the SME was the subsidiary of a larger organizational unit or whether it was stand-alone. This

resulted in a dummy variable that took the value 1 if the company is a subsidiary and the value 0 otherwise.

Legal Form. Since separation of ownership tends to have an important impact on firm strategy (Gedajlovic, 1993) I controlled for this variable by asking respondents whether their organization had a legal separation between ownership and management or whether the manager also owned the company. This resulted in a dummy variable that took the value 1 if the company had a separation of ownership and management and the value 0 otherwise.

4.3.6 Analyses

I used a Zero Inflated Negative Binomial (ZINB) regression model to estimate the effects of the organizational and industry characteristics on inter-firm project venture participation. The choice for this model was informed by the distribution of the dependent variable, which is a count variable with a highly non-normal distribution that rules out conventional OLS regression models (Verbeek, 2004). With such count data, one is generally left with four alternative models that might fit the data: a Poisson regression model, a Zero Inflated Poisson (ZIP), a Negative Binomial regression (NBREG) or a Zero Inflated Negative Binomial regression (ZINB) (Long, 1997). Formal tests are available to choose the most appropriate model (see Long, 1997; Vuong, 1989). In STATA 10, I first ran the Poisson model and conducted a goodness-of-fit test which indicated that the assumption that the dependent variable followed a Poisson distributions was violated (Goodness-of-fit $\chi^2 = 4562.1$, $p < .001$). This is likely due to the excess number of zeros in the dependent variable, which does not fit well with a Poisson distribution (Williamson et al., 2007). Therefore, I ran a ZIP regression model, and performed a Vuong test (Vuong, 1989) of the fit of the ZIP compared to the Poisson. The result of this test confirmed the ZIP over the Poisson ($z= 14.00$, $p < .001$).

However, besides zero inflation, the dependent variable is also characterized by overdispersion (variance = 25.06; mean = 0.54), which is problematic for both the Poisson and the ZIP model (Hilbe, 2007). Therefore, I ran an NBREG model, and it indeed indicated overdispersion of the dependent variable (likelihood-ration test of alpha=0 was statistically significant, $p < .001$). The final step, then, was to compare the fit of a ZINB model, which *simultaneously* corrects for zero inflation and overdispersion, to both the ZIP and NBREG (Long, 1997). For my data, both the ZIP test comparing ZINB versus ZIP (likelihood-ratio test of alpha=0 was statistically significant, $p < .001$) and the Vuong test comparing the ZINB model versus the standard NBREG ($z = 3.89$, $p < .001$) indicated the ZINB regression model to be the best fit to the data.

A potential source of bias in my analysis is the fact that some of the explanatory variables are measured at the industry rather than the firm level. As a result, error terms are likely to be correlated between firms within the same industry. In order to account for this possible correlation of errors within industries, I ran the ZINB regression model with clustered standard errors, which is an appropriate way to model

this multi-level data structure (see Steenbergen & Jones, 2002). As expected, the fit of the ZINB model with clustered standard errors had a better fit to the data than the regular ZINB model (AIC = 2219.2 for the ZINB with clustered standard errors, versus AIC = 2253.2 for the regular ZINB).

4.4 Results

Table 4.3 reports pooled descriptive statistics and correlations for the variables. Most correlations are low to moderate, and the VIFs of the few higher correlations are still well within bounds (Verbeek, 2004).

Table 4.4 presents the estimates of the Zero Inflated Negative Binomial (ZINB) regression model that tests my hypotheses. Model 1 provides baseline results for the control variables only. Model 2 introduces the main hypothesized firm level factors of interest, and Model 3 the main industry factors. Model 4 is the full model with all variables of interest included. A feature of ZINB regression models is that they distinguish the dependent variable between two different ranges; an "inflate" part that determines the effects of the predictors on the likelihood of the dependent variable not taking value 0 (so whether the dependent variable takes the value 0 or >0), and a second "number" part which simultaneously models the effects of the predictors on the dependent variable taking values 1 or higher (Winkelmann, 2008). In my application, this means that we essentially have two different models, modeling the effects of the predictors on the propensity of organizations to engage in IOPVs or not (i.e. the likelihood of the dependent variable taking a value >0 rather than 0) and a model for the number of IOPVs in their portfolio if and when they have at least one (i.e. the dependent variable taking a score of 1 or higher). For clarification, I will also refer to the former as "whether" an SME is likely to engage in an IOPV (i.e. 0 or >0), and to the latter as "how many" IOPVs they engage in (i.e. 1 – ∞)**.** This distinction is essentially a feature of the ZINB regression model (Winkelmann, 2008), and therefore more germane to the analysis than it is to the initial theoretical framework. As I will elaborate below, however, these results started to suggest some interesting substantive differences between these two ranges of the dependent variable. As I discovered these differences only post-hoc, I will treat them as an interesting (and unexpected) outcome of the analyses. Therefore, I deliberately did not specify different a priori hypotheses for these two levels of the dependent variable before.

TABLE 4.3

Descriptive Statistics and Pairwise Correlations[a]

Variable	Mean	s.d.	Min.	Max.	VIF	1	2	3	4	5	6	7	8	9
1. Entrepreneurial Orientation	.58	.49	.00	1.00	1.02									
2. Subsidiary Status	.16	.37	.00	1.00	1.12	.00								
3. Legal Form	.45	.50	.00	1.00	1.50	.12	.17							
4. Innovative Activities	1.04	1.03	.00	3.00	1.16	.02	.17	.24						
5. Size of Human Resource Base[b]	1.89	1.36	.00	4.79	1.56	.11	.31	.50	.34					
6. Efficiency of Human Resource B.[b]	11.44	1.18	6.30	17.03	1.16	.08	.12	.31	.10	.19				
7. Perceived firm-specific uncertainty	1.13	1.00	.00	3.59	1.03	.03	.06	.13	.06	.10	.14			
8. Munificence	16.53	9.21	-.84	30.32	2.45	-.02	-.06	-.07	-.04	-.16	-.10	-.04		
9. Dynamism	2.95	1.70	.00	6.43	1.14	.00	-.05	-.06	-.10	-.13	.03	-.01	.26	
10. Complexity	4.89	6.31	.51	22.38	2.52	.03	.07	.17	.06	.12	.08	.04	-.76	-.31

[a] n = 1725 organizations. Correlations greater than ⍰.07⍰ are significant at $p < .01$.
[b] Logarithm.

The analyses centered on two levels: the organizational level (H1 – H4) and the industry level (H5 – H7). With regard to the organizational antecedents of IOPVs, in keeping with hypothesis 1, Table 4.4 indicates that indeed the scope of innovative activities of an SME is positively and significantly related to both ranges of the dependent variable: whether an SME participates in IOPVs or not ($p < .01$), and also to the subsequent number of them in the portfolio ($p < .001$). Hypothesis 1, therefore, is clearly confirmed by the findings. The effect is more significant for the latter range of the dependent variable (i.e. for the number of IOPVs an SME engages in when it has at least one, i.e. y = 1 - ∞) than for the propensity for them to engage in IOPVs at all (i.e. y = 0 / >0) (Table 4.4).

We found mixed results for the effect of the size of the human resource base on IOPV participation (Hypothesis 2). Although the coefficient for the effect on the propensity for SMEs to engage in IOPVs was in the hypothesized direction (the inflate coefficient being positive), it was only marginally significant ($p < .10$) (Table 4.4). The size of the human resource base I found to be unrelated to the second range of the dependent variable: the number of IOPVs a given SME has in its portfolio.

Hypothesis 3, which stated that IOPVs are more likely to be formed by SMEs with a more efficient human resource base is partly confirmed. The coefficient for the effect of this variable on whether SMEs engage in an IOPV was not statistically significant. Only for SMEs that already participate in IOPVs (y = >0) does the efficiency of the human resource base have a positive and marginally significant effect on the number of IOPVs they engage in concurrently ($p < .10$).

In hypothesis 4 was proposed that perceived firm-specific uncertainty would have a positive effect on IOPV participation. This hypothesis was rejected, as I did not find significant effects of this indicator on whether SMEs engage in IOPVs, nor on the subsequent number of them in their portfolio.

Interestingly, this picture is entirely different for market uncertainty, which does have strong and statistically significant effects on IOPV participation. In hypothesis 5, specifically, I studied the effect of one dimension of market uncertainty, namely munificence, on project venture participation. In contrast to my expectations, I found this effect to be positively and significantly ($p < .001$) related to first range of the dependent variable, whether SMEs engage in IOPVs. Munificence appeared to be unrelated, however, to the subsequent number of IOPVs an SME has in its portfolio.

TABLE 4.4
Stepwise Zero Inflated Negative Binomial Regression Model of Inter-Firm Project Venture (IOPV) Participation[ab]

Variable	Model 1		Model 2		Model 3		Model 4	
***Whether* SMEs engage in IOPVs (y = 0 / >0)[c]**								
Entrepreneurial Orientation	0.34	(0.60)	-0.44	(0.51)	-0.16	(0.33)	-0.24	(0.29)
Subsidiary Status	12.93	(589.8)	-0.16	(0.46)	1.34	(0.92)	0.27	(0.37)
Legal Form	0.87	(0.70)	0.48	(0.60)	1.16	(0.81)	0.46	(0.68)
Innovative Activities			0.17	(0.23)			0.35**	(0.12)
Size of HRB[d]			0.29*	(0.14)			0.18†	(0.11)
Efficiency of HRB			-0.42	(0.32)			-0.12	(0.30)
Perceived firm-sp. uncertainty			0.10	(0.19)			0.23	(0.15)
Munificence					0.13*	(0.06)	0.12***	(0.04)
Dynamism					0.45†	(0.26)	0.36†	(0.20)
Complexity					0.22*	(0.11)	0.23***	(0.08)
Complexity^2					-0.01	(0.01)	-0.01*	(0.00)
Constant	0.35	(0.57)	-4.09	(4.63)	3.41***	(0.76)	2.81	(3.88)
***Number* of concurrent IOPVs (y= 1 - ∞)**								
Entrepreneurial Orientation	-0.65**	(0.23)	0.02	(0.27)	-0.31	(0.28)	-0.10	(0.18)
Subsidiary Status	-0.60†	(0.30)	-0.08	(0.31)	-0.59*	(0.30)	-0.34	(0.23)
Legal Form	1.02***	(0.24)	0.12	(0.35)	0.44	(0.28)	-0.14	(0.42)
Innovative Activities			0.57**	(0.17)			0.44***	(0.12)
Size of HRB			-0.12	(0.10)			-0.03	(0.12)
Efficiency of HRB			0.55***	(0.14)			0.42†	(0.22)
Perceived firm-sp. uncertainty			-0.02	(0.13)			-0.17	(0.15)
Munificence					-0.03	(0.02)	-0.03	(0.02)
Dynamism					-0.20**	(0.07)	-0.19***	(0.04)
Complexity					0.02	(0.05)	-0.07*	(0.03)
Complexity^2					0.00	(0.00)	0.01	(0.00)
Constant	.47†	(0.28)	-7.03***	(2.02)	1.08	(0.68)	-3.92	(3.23)
Observations	1725		1725		1725		1725	
df	9		17		8		8	
Log-likelihood	-1160.3		-1125.5		-1138.1		-1101.6	
AIC	2338.6		2285.1		2292.1		2219.2	

[a] Standard errors in parentheses
[b] Models 3 and 4 introduce variation on the industry level, and are estimated with clustered standard errors
[c] Recoded so that positive coefficients indicate a higher likelihood of inter-firm project venture participation, and negative values indicate a lower likelihood
[d] HRB = Human Resource Base
†. $p < .10$
*. $p < .05$
**. $p < .01$
***. $p < .001$

The second dimension of market uncertainty that was studied, namely industry dynamism, was expected to be positively related to IOPV participation (hypothesis 6). In keeping with this hypothesis, I found that dynamism positively and marginally significantly ($p < .10$) impacts the propensity of SMEs to participate in IOPVs. Contrasting expectations, however, I also found that dynamism is negatively ($p < .001$) related to the subsequent number of IOPVs in a given SME's portfolio. Dynamism thus positively impacts the propensity for SMEs to form an IOPV, but when it already has one negatively influences it forming more concurrent ones.

The final hypothesis 7 predicted that IOPVs are more likely to be formed in industries with moderate levels of complexity. In line with expectations, I found industry complexity to have an inverted U-shape effect on whether SMEs engage in IOPVs, with a positive and significant ($p < .001$) main effect, and a negative and significant ($p < .05$) effect of the squared term (see Figure 4.1). For the effect of industry complexity on the subsequent number of IOPVs in the SMEs' portfolio, I found a negative and significant main effect ($p < .05$).

4.4.1 Robustness Tests

I performed several tests to check the robustness of the above results.[18]

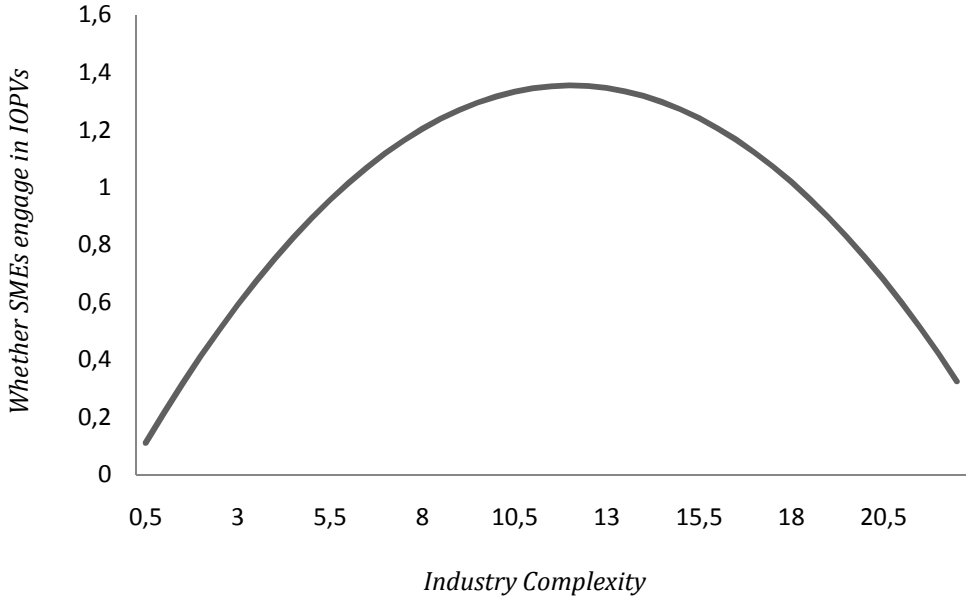
First, I estimated the regression models on random sub-samples in the data. Models based on cross-sectional data are sensitive to heteroskedasticity and multicollinearity issues, especially when they include interaction terms or squared terms. In order to minimize these problems, I estimated industry level clustered standard errors and mean standardized the variables for which the squared term is included in the analysis.

Nevertheless, it has been argued that the estimated coefficients can still be sensitive to mutations in the underlying dataset (Echambadi & Hess, 2007). In order to assess this sensitivity for the data, I estimated the model on 10 randomly drawn sub-samples of the dataset (as suggested by Echambadi & Hess, 2007). Each sub-sample contained approximately 60% of the observations of the full dataset. For each of these 10 sub-samples I obtained results which were virtually identical to those reported in Table 4.4.

As a second way to test the robustness of the findings, I recoded the dependent variable into a binary variable, and ran a more conventional logit regression model on the data. From this analysis with a dichotomized dependent variable I found a similar pattern of results (except of course for those variables that had non-uniform effects on the two ranges of the dependent variable, something a conventional logit regression model is unable to replicate).

[18] The detailed results of these tests were not included because of space constraints but are available upon request

FIGURE 4.1
Effect of Industry Complexity on Whether SMEs engage in IOPVs



A third way in which I tested the robustness of the findings concerns the different possible operationalizations of the industry characteristics included in the regression model. More specifically, besides the method I utilize to measure market uncertainty some alternative ways to do so are proposed in the literature. Keats and Hitt (1988) advocate a method that is highly related to the one I utilize but which is based on a regression of time against the natural log of industry gross-profits. Munificence would then be measured by the antilog of the regression coefficient, whereas dynamism is the antilog of the standard error of the regression slope coefficient. To assess the robustness of my measures I compared the munificence and dynamism measures that result from this procedure with my measures. This comparison revealed that the measures were extremely similar with correlations of 0.99 ($p < .001$) for munificence and 0.92 ($p < .001$) for dynamism. I also assessed the robustness of the munificence and dynamism measures for the industry level measure of resource availability that I used. I re-calculated my measures using industry level turnover instead of gross profits. Again, the resulting measures are extremely similar with correlations of 0.84 ($p < .001$) and 0.98 ($p < .001$). Finally, to assess the robustness of my complexity measure I calculated several other frequently used measures of industry level concentration. Specifically, I calculated the 4, 8, 20, and 50 firm concentration ratios based on the same employment data that was used to calculate the Herfindahl-indices. Again, all measured were extremely highly correlated (between 0.92 and 0.99, $p < .001$). Based on the above, I would argue that my measures or market uncertainty are extremely robust and that utilization of alternative measures has no significant impact on the results. In fact, as the findings were robust to all of the above three tests by yielding a highly similar pattern of results to the findings presented in the main body of this chapter, this increased my confidence in the trustworthiness of my findings.

4.5 Discussion

One of the broad, overarching interests of the present research was to start to attempt to bridge the fields of inter-firm relations and networks with that on projects and project management through a study of IOPVs. As mentioned, while IOPVs are perhaps most directly a specific kind of project (Söderlund, 2004a), they are equally a specific kind of inter-firm collaboration (Jones & Lichtenstein, 2008). My findings regarding dynamism and complexity, amongst others, mirror and extend the results found in the research on alliances (Dickson & Weaver, 1997; Eisenhardt & Schoonhoven, 1996), while my findings on the scope of innovative activities clearly link up with prior work on projects (Gann & Salter, 2000; Hobday, 2000). While IOPVs thus seem to be sub-categories of inter-organizational relations on the one hand, and projects on the other, they are by their distinctive features different from both alliances (as a prime kind of inter-organizational collaboration) and in-house projects (the most studied kind of projects). To the alliances literature, IOPVs, by virtue of their temporariness, contribute an explicit focus on the temporal dynamics involved in inter-firm collaboration. To the projects literature, IOPVs, by virtue of their multi-partnerness, contribute an explicit focus on the inter-firm dynamics involved in project work. In the present chapter, I tried to draw upon crucial insights from both fields of literature in order to understand and explain IOPV participation. An overall interpretation of the main findings yields the following observations.

A first notion concerns the overall effects of the firm and industry levels on IOPV participation. Both the regression model with only firm characteristics included (model 2 in Table 4) and that with just industry variables (model 3) have significantly more explanatory power than model 1 with just control variables, even when corrected for the number of parameters to be estimated. In turn, judging from the AIC (2285 versus 2292), it seems that the firm level variables have slightly more explanatory power than the industry variables, but this difference is relatively small compared to the big drop occurring when both firm level and industry level variables are included simultaneously, with the AIC dropping to 2219. This is a clear indicator that rather than either/or, *both* the firm and industry level of analysis together have significant explanatory power for IOPV participation, and both should be included in our efforts to understand this important process. Rather than a quest for pinpointing which of the levels has *most* explanatory power (cf. Short et al., 2009), this finding builds on previous work which has concluded that both levels are important and should be included in our understanding of inter-organizational collaboration more generally (e.g. Eisenhardt & Schoonhoven, 1996).

A more specific area in which the differences between the level of the firm and the level of the industry do seem to materialize is uncertainty. Specifically, I found firm-specific uncertainty (Hypothesis 4) to be largely unrelated to IOPV participation by SMEs, whereas the effects of the dimensions of market uncertainty (Hypothesis 5, 6, and 7) were strong predictors. This finding demonstrates the importance of the external

environment (market uncertainty) for processes otherwise internal to project-based organizations (PBOs). The work on PBOs has thus far mainly focused on large firms and firm level characteristics, such as structural design (Galbraith, 1971; Hobday, 2000), strategic resources (Shenhar, 2001a) and product innovation (Gann & Salter, 2000; Prencipe & Tell, 2001). Even while the embeddedness of projects within PBOs has clearly been a significant topic of interest (Sydow et al., 2004), the focus of the predominant line of research that studies PBOs has been internal: only rarely is the industry embeddedness of the PBO itself (rather than the project), or its relation to internal functioning an explicit topic of interest (see Whitley, 2006 for an exception). The findings presented in this chapter on the one hand confirm a main idea in this body of literature regarding the central role of innovative activity to the PBO, by demonstrating that it is a significant driver of IOPV participation. On the other hand, the findings clearly indicate the importance of market uncertainty for whether SMEs are likely to participate in projects; whereas I found firm-specific uncertainty to be unrelated to IOPV participation, market uncertainty was found to be a strongly significant predictor. This suggests that exploring market dynamics is crucial to further our understanding of both PBOs and project-based SMEs. While the internal focus of much PBO research has yielded important and fundamental insights, the next step seems to be to explicitly link these internal processes to the wider industry context in which PBOs and project-based SMEs are embedded.

When diving deeper into the more detailed findings within the two levels of analysis, a further overarching interesting element in the findings is the ability to distinguish between the effects of the indicators on two ranges of the dependent variable. As mentioned, I empirically distinguished between *whether* SMEs are likely to engage in inter-firm project ventures (y = >0 rather than 0), and *how many* project ventures they are likely to have in their portfolio, provided that they have at least one (y = 1-∞). Regarding the firm variables, the central findings indicate that an organization's scope of innovative activity has a strong positive effect on both (Hypothesis 1). I expect that this positive relation is explained by the fact that SMEs with a broader set of innovative activities are more likely to experience resource deficits (Teng, 2007), which can be reduced by IOPVs that present opportunities to access, internalize, and develop critical innovative resources from other firms. It empirically confirms the work that has linked the temporary and dynamic nature of project-based organization to innovation, which has proposed that being temporary breeds a strong task focus and a break from normal routines, and prevents lock-in by partners working together over longer periods of time that can thwart innovation (Grabher, 2002a; Skilton & Dooley, 2010). Two organizational level variables that had different effects on the two ranges of the dependent variables were the size and quality of the human resource base (Hypothesis 2 and 3), but since their individual effects were only marginally significant on just one of the ranges of the dependent variable, these will not be the main focus of my discussion (which is not to say, as before, that these - as a group- are unimportant).

On the level of the industry, the three dimensions of market uncertainty appeared to have non-uniform effects on the two ranges of the dependent variable as well. Specifically, contrary to my expectations that set forth a negative relationship, munificence (Hypothesis 5) appeared to be positively related to whether SMEs are likely to engage in IOPVs. I interpret this finding as indicating that inter-firm project collaboration is rather the result of the *opportunities* that (excess) resources in the environment of organizations bring, than a result of resource *needs* induced by a resource scarce environment. This finding contrasts the findings from work on other forms of collaboration, like board interlocks (Boyd, 1990), which stipulates a negative relation. Resource needs versus resource opportunities, then, may indicate one area in which IOPVs are really different from other types of collaboration. Dynamism (Hypothesis 6) appeared to be positively related to whether to form IOPVs, but, contrasting my expectations, was negatively related to the subsequent number of IOPVs an SME participates in if it has at least one. Dynamism thus positively impacts the propensity for organizations to form an IOPV but when it already has one, negatively influences it forming more concurrent ones. I would interpret this finding as indicating that apparently, while in line with the expectation that dynamism leads to a larger propensity to engage in one IOPV to mitigate uncertainty, there are costs involved in managing a larger portfolio of IOPVs in a dynamic environment. Specifically, when a firm has a larger portfolio of IOPVs, there are many external actors to monitor (Aldrich & Pfeffer, 1976). When an environment is highly dynamic, the costs involved in continuously collecting up-to-date information on these external partners is high, and it seems to off-set the benefits involved of inter-firm collaboration in dynamic environments (Boyd, 1990; Jones & Lichtenstein, 2008). The curvilinear effect of complexity (Hypothesis 7) on whether SMEs are likely to engage in IOPVs is in line with the thesis that market uncertainty is positively related to IOPV formation, but the negative main effect on the number of IOPVs SMEs engage in is not.

The overall pattern in these findings seems to indicate that for IOPV participation, there is a crucial difference between the propensity for SMEs to engage in them (the "whether") and for the subsequent size of their portfolio (the "how many" or number). This is a distinction that is rarely made, even in other types of inter-firm collaboration studies, but might seem crucial as between the two different dynamics appear to be in play. In fact, this finding has important implications: participating in one collaborative venture seems to require a different constellation of antecedents than participating in multiple collaborations concurrently. The work on alliance portfolios (Wassmer, 2010) has as a fundamental premise that alliance portfolios are fundamentally different from individual alliances, and more than just a sum of their parts (Ozcan and Eisenhardt, 2009; Faems et al., 2005). In particular, it has been noted that they generate returns above and beyond those of the sum of the individual alliances (Duysters & Lokshin, in press) but also that they require a portfolio approach from alliance managers (Rothaermel & Deeds, 2006). Whereas the predominant work on alliance portfolios has focused on outcomes (such as performance, Wassmer, 2010), my findings bolster the

same premise, but for the antecedents side: participation in portfolios of, in my case, IOPVs, are a function of a different constellation of antecedents than participation in an individual IOPV. By implication, to go out and collaborate in one IOPV is different from the decision to add additional IOPVs to the portfolio when that initial step has been taken. This underscores and extends one of the central premises of the project portfolio literature: to enter into a single alliance is qualitatively different from entering into a portfolio of multiple alliances (see Duysters & Lokshin, in press; Ozcan and Eisenhardt, 2009).

4.5.1 Limitations and Future Research Directions

There are a number of limitations to the present study, and they should be noted.

First, while my analyses center on IOPV participation, the dynamics behind this process are not covered by the data. Nevertheless, it is a reality that the roles of different SMEs in an IOPV can be different, where one might be the instigator of a project and another SME plays a more peripheral role. Moreover, the composition of many IOPVs can be unstable, and organizations can leave, or later join, an IOPV during its existence (Duso et al., 2010). The data did not allow studying these dynamics behind IOPV participation and the different roles of the project partners in-depth, and future research would do well to include it in future analyses.

A second limitation concerns the fact that I could not make a distinction between the potentially different behavioural outcomes of firm-specific vis-à-vis market uncertainty. As mentioned, I could in the dependent variable not distinguish between projects with and without existing prior ties between the collaborating SMEs. This might partly explain the differences in findings between my measure of firm-specific and market uncertainty. Future research could extend this work by studying the effects of firm-specific uncertainty and market uncertainty on IOPVs with and without prior ties between the involved parties. Based on the work by Beckman et al. (2004) I would expect firm-specific uncertainty to lead firms to broaden their project network, engaging in IOPVs with new partners, and market uncertainty to lead firms to reinforce their project network, engaging in additional IOPVs with existing partners. I would recommend future research to study this important issue.

A third limitation of the present study concerns the fact that I merely focused on IOPV participation by SMEs (i.e. not large firms). I did so because SMEs form a substantial part of the economy, and are often under-represented in large scale quantitative work. Moreover, IOPVs are key vehicles to achieve tasks too big or complex for SMEs to complete alone because of a lack of expertise or diseconomies of small scale, while helping them to stay adaptive and competitive by avoiding rigid, long term resource commitments (Nooteboom, 1994). Even so, one cannot assume that what I find here equally applies to IOPV participation by larger firms. Incidentally, the majority of work on projects has looked at the kinds of projects engaged in by large firms (see, for

instance, Bredin & Söderlund, 2007; Lindkvist et al., 1998). While my results clearly complement such work, I cannot on the basis of the data make claims stating which of the findings are also applicable to larger firms, for which, for instance, resources other than human resources might be more critical than for SMEs, and for which the dynamic between firm specific and market uncertainty might be entirely different.

4.6 Conclusion

The present chapter started from the notion that despite marked progress, we know relatively little of why organizations in general, and SMEs in particular, engage in inter-firm project ventures (IOPVs). My large scale quantitative approach, with the large cross-section of industries it covers, is among the first to attempt to systematically cover the IOPV phenomenon and map its empirical manifestations. As such, it attempts to complement and generalize from the many excellent qualitative works which have sought to study project-based organizing and which have dominated this field thus far. It also builds on the notions regarding prevalence of IOPVs set forth in chapter 3. Building on two essential features of IOPVs (them being temporary and multi-partner) and a long line of research on the organizational and industry antecedents of alliance formation, my main goal was to explore IOPV participation and its firm and industry antecedents. Even though it was acknowledged up to this point that there might be variation between different kinds of IOPVs, this variation was not explicitly studied or taken into account. Therefore, my subsequent empirical study (reported in chapter 5) would focus exactly on this issue: the variation between IOPVs, and the implications thereof for one of the central theoretical constructs of this research: project-based learning.

Chapter 5

Dealing with Diversity: The Implications of Inter-Organizational Project Diversity for Project-Based Learning[19]

5.1 Introduction

Recent research has suggested that inter-organizational project ventures (IOPVs) present a number of interesting challenges with regard to theories of, for instance, trust formation (Meyerson et al,. 1996) and coordination (Bechky, 2006). One of the main sources of recent scholarly interest, however, has been how IOPVs learn (e.g. Cacciatori, 2008; Grabher, 2004b).

Evolutionary economics sets forth a compelling argument that the survival and growth of organizations is to an important extent determined by firm-specific competencies and dynamic capabilities (e.g. Dosi, 1982; Nelson & Winter, 1982). Such competencies and dynamic capabilities are the result of learning processes (like experience accumulation, knowledge articulation and knowledge codification, Zollo & Winter, 2002) that determine the firm's ability to integrate, build, and reconfigure itself to address rapidly changing environments (Teece et al., 1997: 516). While the dominant theories of organizational learning cater for the fact that economic activities are increasingly crossing the boundaries of formal organizations (Sinha & Van de Ven, 2005), the nature of collaboration is in such theories with little exception viewed as a stable and open-ended process (Schwab & Miner, 2008). In IOPVs, however, the nature of collaboration is temporary. More specifically, IOPVs revolve around temporary systems of functionally interdependent but legally autonomous organizations that cooperate to complete pre-defined project tasks in an ex ante (contractually) defined limited amount of time (Jones & Lichtenstein, 2008). This discontinuous logic strongly challenges the

[19] This chapter is based on:
Bakker, R.M., Oerlemans, L.A.G., Kenis, P. & Vermunt, J.K. A Configurational Approach toward Project-Based Learning. Manuscript under review.

While this chapter, in line with the rest of this dissertation, is written in the first person, this research was conducted in cooperation with Leon Oerlemans, Patrick Kenis, and Jeroen Vermunt.

Previous versions of this chapter were presented at the 2010 Academy of Management Annual Meeting (Montréal, August 2010), the 2010 Tilburg Conference on Innovation (Tilburg, June 2010) and at the 2009 IRNOP Conference (Berlin, October 2009). It won the Best Paper Award 2010 (1st prize) at the European Academy of Management Doctoral Consortium (Rome 2010).

supposedly systematic process of how organizational operating routines slowly evolve by learning through continuous performance feedbacks (Zollo & Winter 2002).While anecdotal evidence suggests that some organizations manage to develop durable capabilities and learn through running projects, many do not.

My concern in the present chapter is to build on chapter 3, which already demonstrated that there is considerable variation between different kinds of IOPVs, as well as the four themes from chapter 2, in developing an empirically derived taxonomy of different types of IOPVs, and discussing its implications with regard to project-based learning. In so doing, this chapter contributes to the body of research that studies organizational learning from projects (e.g. Cacciatori, 2008; Davies & Brady, 2000; Grabher, 2004; Prencipe & Tell, 2001; Scarbrough et al., 2004; Sydow et al., 2004). While this body of research has greatly extended our understanding of the process of project-based learning, it has also yielded a number of ambivalent findings (Chaston, 1998). Scarbrough et al. (2004), for instance, found that the degree and kind of learning taking place in two projects at a water supply treatment organization and a construction firm were entirely different from one another with respect to learning boundaries. As a consequence, several studies have concluded that one of the crucial, and thus far ill-understood, drivers of project-based learning are the specific project contexts in which the learning process takes place (see Prencipe & Tell, 2001; Scarbrough et al., 2004: 1597). Nevertheless, our influential theories of project-based learning rarely seem to take into account the inherent variation between different kinds of projects, nor specify propositions toward different types of projects (see Whitley, 2006). In fact, Prencipe & Tell (2001), one of the seminal works on the subject matter, concluded that the current research on project-based learning "calls for some kind of contingency analysis where variables such as size, strategy, task complexity [..] etc. are related to the effectiveness of inter-project learning mechanisms" (p. 1391). It is exactly this challenge that the current chapter attempts to pick up by taking a configurational approach toward project-based learning by a study of IOPVs among SMEs.

I deliberately chose to focus on SMEs because of a gap in the project literature, which has thus far had a primary focus on projects engaged in by large organizations despite the fact that particularly for SMEs, projects are a crucial driver of revenue (Turner et al., 2009). My approach, then, is to systematically find and apply theoretically and empirically meaningful dimensions of IOPVs into specific combinations ("configurations") and to study how project-based learning takes place within each of these types (Meyer et al., 1993). Along with the call among scholars interested in project-based learning, configurationalist researchers namely believe that an increased understanding results from identifying distinct, internally consistent sets of organizational forms, in this case IOPVs (Ketchen et al., 1993). Configurationalist researchers also believe that phenomena should be understood as being shaped by organizational "wholes", and that they cannot be properly understood by looking at parts of organizational forms in isolation (Miller, 1996). Theories of project-based learning have thus far predominantly studied bivariate relations between cause (e.g.

codification) and effect (e.g. knowledge transfer). Especially an intricate process like learning, however, is likely the result of a complex constellation of many simultaneous organizational contingencies (Drazin & Van de Ven, 1985). As such, I would suggest that the development of a configurational approach fills an important gap in the study of project-based learning.

I will develop this configurational approach on project-based learning by the use of a multi-method approach, involving both quantitative and qualitative data. The quantitative data analysis consists of a latent class clustering analysis of an original sample of 1,500 SMEs in order to empirically develop a broad taxonomy of different configurations of IOPVs. This is a necessary first step to try to start to systematically categorize the main project contexts that exist empirically, reducing the number of theoretically possible configurations to those major ones that commonly occur in practice. In so doing, I believe I am among the first in this domain to try to use quantitative research to generalize from the many excellent qualitative studies that have been conducted on project-based learning. Second, in order to get a thorough understanding of the mechanisms that trigger or hinder the learning in each of the categories, I conducted an in-depth comparative case study of actual projects in each of the clusters. It is the combination of insights from this multi-method approach that will form the heart of this chapter's contribution, which is to 1) pinpoint the specific project contexts in which learning mechanisms like experience accumulation, knowledge articulation, and knowledge codification are more or less effective through an empirical development of a classification of IOPVs, and 2) to identify new learning processes in IOPVs, namely: unintended learning, insulating and knowledge leakage. I will capture these issues by a set of testable propositions. Moreover, I will demonstrate how these findings together start to peel back on a broader theoretical issue, namely the supposed uniform, deliberate and pro-active nature of project-based learning that has been central to theory development thus far.

5.2 Theoretical Framework

There is an extensive body of research rooted in evolutionary economics (Dosi, 1982; Nelson & Winter, 1982) and the resource-based theory of growth and capability building (Penrose, 1959) that sets forth that the survival and growth of firms is to a large extent dependent on firm-specific competences and capabilities (Cacciatori, 2008). Such competences and capabilities can constitute both a strong base of resources in a particular domain (Penrose, 1959), as well as the accumulated knowledge and experience of the pool of people working in the organization by which these resources get leveraged (Brady & Davies, 2004). Especially the latter kind of knowledge-based resources are valuable because they are, amongst others, hard to imitate and result from learning processes that "encode inferences from history into routines that guide behaviour" (Levitt & March, 1988: 517). As such, organizations remember through routines (Nelson & Winter, 1982), which slowly evolve through specific learning

mechanisms. These learning mechanisms are central to the argument developed in this chapter.

Zollo & Winter (2002) distinguish three learning mechanisms: experience accumulation, knowledge articulation, and knowledge codification. *Experience accumulation* refers to the central learning process by which routines are established and engrained through the activities that organizations undertake in reaction to various internal or external stimuli (Zollo & Winter, 2002). Routines are tacit and programmatic (Nelson & Winter, 1982), and they "reflect experiential wisdom in that they are the outcome of trial and error learning and the selection and retention of past behaviours" (Gavetti & Levinthal, 2000: 113). As such, experience accumulation is skill building: learning by doing and learning by using in daily organizational operations (Zollo & Winter, 2002). *Knowledge articulation*, in contrast, refers to "the deliberative process through which individuals and groups figure out what works and what doesn't in the execution of a certain organizational task" (Zollo & Winter, 2002: 341). Knowledge articulation is the second learning mechanism, in which a cognitive effort is brought to bear on articulating the accumulated experience on the job. The central role of conversation to knowledge articulation indicates a more collective endeavour than the case of experience accumulation. Therefore, knowledge articulation, rather than learning by doing and learning by using, involves learning by thinking and reflecting, and learning by discussing and by confronting within groups that work on projects (Prencipe & Tell, 2001). *Knowledge codification*, finally, the third learning mechanism, involves the highest level of cognitive effort, and involves the codification of knowledge in various written tools, such as manuals, databases, and project evaluations (Zollo & Winter, 2002). As such, it is the third step in the process, in which the accumulated experience that has been articulated is codified for future use. In a project context, knowledge codification is necessary to transfer knowledge from the project to the permanent organizations involved, before it is disbanded. While available research has consistently pointed to the advantages of knowledge codification (Cacciatori, 2008; Prencipe & Tell, 2001), it should be noted that there are considerable costs involved as well. These involve, time, resources, possible inappropriate future use, and possibly, organizational inertia (Zollo & Winter, 2002). The three learning mechanisms together, Zollo & Winter (2002) suggest, dynamically impact the evolution of two distinctive types of organizational competences and activities: operating routines, i.e. the operational functioning of the firm, and dynamic capabilities, i.e. the ongoing modification of operating routines.

In contrast to enduring organizations, IOPVs revolve around a temporary nature of collaboration (Grabher, 2002). This means that they have an ex ante defined limited period of interaction between members, before the project is disbanded and ceases to exist (Bakker, 2010; Jones & Lichtenstein, 2008). It is this discontinuous and to a certain extent unique nature of projects that strongly challenges the supposedly systematic process of how organizations slowly evolve by learning through the aforementioned three learning mechanisms (Zollo & Winter 2002). Prencipe & Tell (2001) were among

the first to take Zollo & Winter's (2002) three-fold learning mechanisms framework to develop a theory of project-based learning. Project-based learning, therefore a sub-set of organizational learning, is in that sense often referred to as encompassing the creation and articulation of knowledge within temporary project ventures, and the codification and transfer of this knowledge to an enduring environment (Prencipe & Tell, 2001; Scarbrough et al., 2004). Scholars have recently contributed to this literature stream by drawing attention to project capabilities from experience accumulation (Brady & Davies, 2004), learning boundaries in the codification and transfer of knowledge (Scarbrough et al., 2004), and memory objects that can overcome such boundaries (Cacciatori, 2008). From this collection of literature, it becomes clear that when we take a project-centric view of project-based learning, we should at the very least dissect project-based learning into 1) knowledge creation within the project by experience accumulation, 2) knowledge articulation and sharing between participants within the project, and 3) knowledge codification and the subsequent transfer from the project to the involved organizations before, or immediately after, task completion. The literature suggests that with regard to these processes IOPVs present what might be called a "learning paradox". On the one hand, through their transience and inter-disciplinary nature, they are very suitable for creating knowledge in the context of its application (Gann & Salter, 2000; Hobday, 2000; Grabher, 2004). On the other hand, however, their temporary nature can inhibit the subsequent articulation and transfer of this knowledge, because when the project dissolves and participants move on, the created knowledge is likely to disperse (Grabher, 2004; Ibert, 2004).

A crucial question that remains, however, is whether this paradox plays out the same way in every type of project, especially when these concern IOPVs between smaller organizations. Following previous research, the running hypothesis is that this is unlikely. There namely exists large variation between different project contexts, which can have entirely different logics of functioning (Whitley, 2006), and learning is highly context dependent (Prencipe & Tell, 2001; Scarbrough et al., 2004). For example, Tyre & Von Hippel (1997) demonstrated that the experience accumulation by engineers working on new production projects is entirely different between lab and plant settings. The exact contextual factors that determine the effectiveness of project learning mechanisms, however, and in which combinations they are empirically "out there" are unknown thus far (Prencipe & Tell, 2001). I attempt to address this gap by first making a systematic, empirical clustering of different types of IOPVs based on a large scale survey, and to then closely study the learning taking place in each of the types by means of an in-depth comparative case study.

5.3 Methods

As mentioned, this study's research approach hinged on two stages. First, I needed to create a systematic classification of IOPVs that exist empirically, with a focus on the role

of the SME. Since no such systematic taxonomy was readily available[20], I created it myself through a large scale quantitative study, which I will describe first. Second, I will describe how I used this quantitative data to select an "ideal type" case from each of the configurations, which I then studied in-depth through a comparative case study in order to find how experience accumulation, knowledge codification and knowledge articulation vary by project type, and which other mechanisms might emerge that trigger or hinder learning in these specific project contexts.

5.3.1Stage 1: Quantitative Study

Research Setting and Sampling Strategy. The primary means of data gathering underlying the quantitative part of this study was a telephone survey amongst 1,500 small and medium sized enterprises (SMEs; 1-250 employees), which was conducted between September and December 2006 by trained interviewers with extensive experience in conducting telephone interviews. There are two reasons why I specifically targeted SMEs. First, particularly for small firms, IOPVs are a very important vehicle to achieve tasks too big or complex for them to complete alone because of a lack of expertise or diseconomies of small scale. At the same time, it helps SMEs to stay adaptive and competitive by avoiding rigid, long term resource commitments (Nooteboom, 1994). In fact, it has been recently found that on average one third of the total turnover of SMEs is project-based (Turner et al., 2009). A second, more general reason concerns that SMEs are an under-represented category in large N quantitative research and sampling techniques (Schilling, 2009). This is the case despite the fact that far most economic activity takes place not in large firms, but in SMEs. In Europe, SMEs employ the majority of the labour force, include two thirds of sales volume in the non-primary industry, and comprise 99.9% of the total number of registered enterprises (Mulhern, 1995).

My research question gave rise to two demands with regard to sampling strategy. On the one hand, it needed to include firms from all relevant industries and size classes (1-9 employees; 10-49; 50-99; 100-250) for external validity. On the other hand, in order to learn more about the specific characteristics of IOPVs, the sample should identify a substantial number of SMEs that participated in at least one project. To meet both requirements, I drew a large stratified sample in which was consciously sampled a disproportionally large number of SMEs from industries and size classes where I assumed based on insights from prior research that the prevalence of IOPVs would be high. This included industries such as the film and entertainment industry, construction,

[20] There have been previous attempts to construct typologies of projects (e.g. Artto & Kujala, 2008; Jones & Lichtenstein, 2008; Shenhar, 2001; Shenhar & Dvir, 1996; Whitley, 2006), but these do not perfectly match our specific purpose here, either because they are conceptual, or mainly focused on in-house projects, or not explicitly focused on SMEs.

engineering and consultancy. In order to find other industries with a relatively high density of IOPVs, the fieldwork was split into two waves of data collection. In the first wave, 500 telephone interviews were completed across all relevant industries and size classes. The results of this wave were subsequently used to determine the stratification strategy for a second wave of 1,000 completed interviews. In total, 6,064 SMEs were contacted in order to reach a total number of 1,500 completed interviews (the affordable maximum that was agreed in the contract with EIM Policy Research). As a result of this stratification, the sample of 1,500 SMEs covered all relevant economic industries and size classes, with a disproportionally large number of firms from industries and size classes where inter-firm projects were found relatively often. Table 5.1 presents a breakdown of the sample by industry and size class.

TABLE 5.1
Breakdown of Sample of Quant. Study by Industry and Size Class

Industry		
Manufacturing	281 (18.7%)	
Of which: paper, petroleum products, chemicals, plastics, glass, basic metals and machinery		267 (17.8%)
Food, textile, leather, wood, electronics, transportation, and furniture		14 (0.9%)
Construction	295 (19.7%)	
Trade and repair	62 (4.1%)	
Hotels and catering	60 (4.0%)	
Transportation and communication	188 (12.5%)	
Of which: across land		171 (11.4%)
Other		17 (1.1%)
Financial Services	134 (8.9%)	
Business Services	234 (15.7%)	
Of which: engineering		73 (4.9%)
Consulting		55 (3.7%)
Businesses - other		106 (7.1%)
Services - other	243 (16.1%)	
Of which: theatre, media, and entertainment		128 (8.5%)
Employment organizations		110 (7.3%)
Other		5 (0.3%)
Other	3 (0.2%)	
Total	**1,500 (100%)**	
Size Class (no. of fte)		
1-9 employees	96 (6.4%)	
10-49 employees	199 (13.3%)	
50-99 employees	638 (42.5%)	
100-250 employees	567 (37.8%)	
Total	**1,500 (100%)**	

Variables and Measures. In order to extract relevant dimensions on which IOPVswould be likely to vary, I performed a systematic review of the literature (see Chapter 2). The

structure of this review closely follows chapter 2 of this dissertation, which distinguished four themes in the current body of literature: time, task, team, and embeddedness (or "context"). Within each of these themes, I searched for important dimensions that would likely be indicators of variation between different types of IOPVs. Table 5.2 presents an overview of these dimensions, the relevant literature that describes them, and the operationalization of these variables in the quantitative study.

As Table 5.2 demonstrates, my analysis of the existing literature indicated seven dimensions on which IOPVs are likely to vary: 1) their duration, 2) their size in terms of the number of participating organizations, 3) the uniqueness of the project's tasks, 4) the size of the budget awarded to the project, 5) whether it is granted with a separate legal status, 6) the extent to which there are prior ties between the parties involved, and 7) the industry in which the IOPV is embedded. These seven dimensions formed the heart of our survey questions, and guided the subsequent analysis and clustering of my data. Table 5.2 also demonstrates how each of these dimensions were measured in the survey.

Statistical Model and Analysis. The aim of my statistical analysis was to come up with configurations (or, more technically, homogeneous clusters) of IOPVs, which differ from one other in terms of the seven dimensions described above. I employed a relatively novel Latent Class (LC) clustering technique, which is a model-based clustering method offering various advantages over traditional clustering methods like K-means and hierarchical clustering (Vermunt & Magidson, 2002). Similar to factor analysis, LC analysis makes use of a latent variable model, but with the important difference that the latent variable is not continuous but categorical, as well as that the observed variables cannot only be continuous but also categorical (dichotomous, ordinal or nominal). The main advantages of using LC analysis instead of traditional clustering techniques, is that 1) more formal measures are available to determine the number of clusters (see Ketchen & Shook, 1996, for a discussion of this problem in traditional cluster analysis); 2) variables of different scale types can be used in the analysis (in my case dichotomous, ordinal and nominal variables); 3) observations with partially missing information can be retained in the analysis, and 4) a distinction can be made between variables which are affected by the cluster membership (indicators) and variables affecting the cluster membership (covariates), a feature I utilized in my analysis (as will be explained in more detail below).

TABLE 5.2
Variables for Quant. Study and Operationalizations

	PHENOMENON	
	Label	*Operationalization in Quant. Study (survey item)*
	Inter-organizational project	Asked respondent of every SME in telephone survey sample: "Inter-organizational projects are temporary collaborations in which multiple organizations collaborate on the execution of a certain task or achievement a common goal, of which the end-date has been pre-determined on a certain date or when the project is finished. Does your organization currently collaborate with other organizations in one or more of such inter-organizational projects?" In case of multiple projects, we asked the respondent to focus on the most recent one in further questions.
	VARIABLES	
Theme	*Extracted Dimension*	*Operationalization in Quant. Study (survey item)*
Time	1. Duration of project (Grabher, 2002; Jones & Lichtenstein, 2008)	"What was the start date of this project?" "What is the planned end date of this project?" We computed the time lag between the two in months, and re-coded this from a continuous variable into a categorical variable with ordinal categories.
Team	2. Size of the set of organizational actors involved in project (Goodman & Goodman, 1976; Shenhar, 2001; Shenhar & Dvir, 1996)	"How many organizations - in total – are involved in the execution of this project?" This variable was re-coded from a continuous variable into a categorical variable with ordinal categories.
Task	3. Task uniqueness (Brady & Davies, 2004; Gann & Salter, 2000; Lundin & Söderholm, 1995)	"What is the most important task of this project?" "Do you perceive of this task as a unique task, or one that recurs frequently?" (Dichotomous).
	4. Scope of task: budget (Shenhar, 2001; Shenhar & Dvir, 1996)	"What was the size of the budget (in Euros) that was awarded to this project?" This variable was re-coded from a continuous variable into a categorical variable with ordinal categories.
	5. Legal status (Faulkner & Anderson, 1987; Whitley, 2006)	"Has for this project a separate legal entity been created?" (Yes/No).
Embedd-ness	6. Presence/absence of prior ties between network partners (Engwall, 2003; Jones & Lichtenstein; 2008)	"Have you in the last 3 years collaborated before with one or more of the other organizations that are involved in the current project?" (Yes/No)
	7. Industry (Bechky, 2006; Sorenson & Waguespack, 2006)	Three-digit SBI code of industry in which SME is active based on data entry Chamber of Commerce.

Three issues should be stressed with regard to the LC analysis. First, I already mentioned that I categorized the variables duration, size and budget so that they could be treated as categorical variables in the analysis. This has an advantage in that one does not need to make strong assumptions about the distribution of these variables within clusters, which would have been needed if these would be treated as continuous variables or counts. In my analysis, I treated these three categorized variables as ordinal indicators, which implies that the information on the ordering of the categories was retained. Second, in the LC model specification I used the possibility to distinguish indicators from covariates, which are two subsets of variables playing slightly different roles in the identification of the clusters. More specifically, variables 1 through 5 (duration, size, uniqueness, budget, and legal status) were defined to be indicators, whereas the two embeddedness variables (prior ties, industry) were treated as covariates. The indicators are attributes of the (types of) IOPVs themselves, while the covariates (prior ties and industry) are environmental factors determining what type of project is to be formed. The latter enter in the LC models as predictors in a multinomial logistic regression equation in which the cluster membership serves as the dependent variable. The values of the indicators, on the other hand, are predicted by the cluster membership of a project. Third, we ran the LC cluster analyses in Latent GOLD, which is a freely available software package (Vermunt & Magidson, 2005). This clustering analysis was performed on a sub-set of the data, namely those firms (17%, N = 252) that engaged in joint IOPVs (see Table 5.2, for my operationalization of IOPVs).

As mentioned, one of the advantages of LC analysis is that there are various measures available to inform a decision on the number of clusters needed to describe the data, the most popular of which are the information criteria the BIC, AIC, and AIC3 (Fraley & Raftery, 1998). Of these, AIC3 (or Akaike Information Criterion 3) has been shown to be the most appropriate with regard to categorical indicators (Dias, 2004). The preferred model is the one for which these fit indices take their minimum value. Table 5.3 presents these model fit statistics for our data. As all of the variables in our model are categorical, we chose to adhere to the AIC3 criterion, yielding an optimal 3-cluster model. This 3-cluster solution was supported in additional Bootstrap analyses (see Vermunt & Magidson, 2005), which demonstrate that the 3-cluster solution has a significantly better fit than the 2-cluster model (Difference in -2LL = 54.0054; $p < .001$), which in turn had a better fit than the 1-cluster model (-2LL Diff. = 108.11; $p < .001$), but the 4-cluster model did not present a significantly better fit than the 3-cluster model (-2LL Diff. = 31.9072; $p = .07$). Closer inspection of other relevant statistics of this particular model (not reported because of space constraints) indicated that the three cluster solution describes the data appropriately, and that each of the clusters has at least one unique feature.

TABLE 5.3
Latent Class Cluster Model Fit Indices

Model	LL	BIC(LL)	AIC(LL)	AIC3(LL)	Npar	Class.Err.
1-Cluster	-1266.44	2626.87	2566.87	2583.87	17	0
2-Cluster	-1212.38	2596.17	2486.76	2517.76	31	0.08
3-Cluster	**-1185.38**	2619.58	2460.75	**2505.75**	**45**	**0.09**
4-Cluster	-1168.87	2663.98	2455.74	2514.74	59	0.10
5-Cluster	-1153.22	2710.08	2452.43	2525.43	73	0.15
6-Cluster	-1137.24	2755.53	2448.47	2535.47	87	0.14
7-Cluster	-1123.65	2805.78	2449.31	2550.31	101	0.15
8-Cluster	-1107.60	2851.08	2445.19	2560.19	115	0.13

5.3.2 Stage 2: Qualitative Study

Comparative Case Study Design. While the quantitative study systematically categorized three major classes of IOPVs, the overall purpose of my study also entailed a detailed comparison of learning mechanisms. Because the nature of such mechanisms is quite subtle and sensitive to context (Prencipe & Tell, 2001), I studied them through an in-depth comparative case study of one case per cluster. The strategy entailed that on the basis of the quantitative data reported above (252 cases of IOPVs), a limited number of cases was selected that very closely resembled each of the ideal type configurations of IOPVs. These cases, through their answers on the survey items and the completeness of the data they had provided, proved to be promising exemplars of each of the three configurations and were the closest to resemble the observed patterns in the data. Respondents of these cases were sent an information letter through the contact information that had been collected in the telephone survey, which asked them if they would be willing to participate in follow-up research. The majority of these cases (seven in total) were willing to cooperate, and for each of these cases an exploratory face-to-face interview was planned with the same respondent of the same SME that had been contacted in the telephone survey. From this initial interview, some cases appeared to be more willing to disclose information and have researchers do actual case study research than others. Based on the initial interview, the three most promising cases, one for each class of IOPVs, were selected (Table 5.5, reported below, will describe each of the cases by their pattern of scores on the seven dimensions of variation that were used to construct the taxonomy in the quantitative study).

Data Sources for Case Study Data. From the initial interviews with the original respondents of the phone interviews, I subsequently employed snowball sampling in order to find and interview additional respondents from the other organizations involved in the project, both respondents that were intimately tied to the project, as well as those that remained within the parent organizations through project operations. In total, 15 such interviews were conducted within the three cases under study, with an average interview time of about one hour, the shortest interview taking 35 minutes, and

the longest taking one hour and 12 minutes. All interviews were conducted one on one with the respondents, often in their private offices. All interviews were described at verbatim, and supplemented by field notes that were written down during the visits to the organizations. Because of the explicit theoretical question that I was after, but in order to also let interesting learning mechanisms emerge inductively from the data, all interviews were semi-structured. The topic list, which was slightly modified after each interview, included both relatively broad questions with regard to the IOPV, as well as more detailed learning questions, which related to the theoretical framework (Experience accumulation/ knowledge creation/ learning by doing/ learning by using; Knowledge codification/ knowledge sharing/ learning by reflecting/ learning by thinking/ learning by discussing/ learning by confronting; Knowledge codification/ knowledge transfer/ learning by writing/ learning by implementing/ learning by replicating/ learning by adapting). The interview data were supplemented with notes from visual observations and post-interview evaluations, and a wide range of documents that could be found pertaining to the cases. These documents included news paper articles, contracts, minutes of meetings and project evaluation reports.

Analytic Approach. The method of analysis I employed draws mainly on the work by Miles & Huberman (1994) and Eisenhardt (1989). This approach entails a continuous comparison between data and concepts throughout the analysis phase. Since in this study data analysis followed data collection, I travelled back and forth between data and emerging concepts, and, later in the process, between the concepts and evidence (Locke, 2001). I commenced the content analysis by developing a crude framework, based on theory, the topic list, and my first interpretation of the data. In subsequent rounds of coding and analysis I allowed additional constructs to emerge from the data more inductively. My approach toward analysis of the data consisted of two stages, a within-case analysis, and a cross-case analysis (Eisenhardt, 1989). The within-case analysis involved writing-up a think description for each case, becoming intimately familiar with each of the cases as a stand-alone entity (Eisenhardt, 1989). By subsequently looking for patterns across the cases in a cross-case analysis, I systematically compared the learning mechanisms that emerged, as well as their effectiveness, in each of the three specific types of IOPVs that had resulted from the quantitative clustering analysis.

5.4 Results

Table 5.4 presents descriptive statistics from the quantitative study. Table 5.5 presents the combined results from both the quantitative study in terms of the taxonomy I empirically developed, and the within-case analysis of the cases that were studied in the qualitative study.

TABLE 5.4
Descriptive Statistics of Variables in Quant. Study

Variable	Mean	S.D.	N	1	2	3	4	5	6	7
1. Duration	3.04	1.40	227	1						
2. Size	4.79	6.105	250	.073	1					
3. Task Uniqueness	0.48	.50	242	.089	-.025	1				
4. Budget	5.43	2.21	113	.304**	-.063	-.012	1			
5. Legal Status	1.68	.47	251	-.257**	.099	.083	-.454**	1		
6. Prior Ties	0.76	1.480	249	.034	.263**	.076	.171	.138*	1	
7. Industry	Nominal		251	-.058	.174**	.180**	-.374**	.259**	.024	1

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

TABLE 5.5
A Taxonomy of Three Configurations of Inter-Organizational Projects

Step 1: Quantitative Study	Type 1: *Routine Informal*	Type 2: *Outsized Insulated*	Type 3: *Mini One-off*
Descriptive Dimensions			
Prevalence	62%	22%	6%
Duration	Average	Long	Short
Size	Average	Big	Small
Task Uniqueness	Low	Average	High
Budget	Small	Big	Average
Formality (legal status)	Informal	Formal	Majority formal
Social embeddedness (prior ties)	Average-high	High	Low
Industry	Spread out over many industries, but mostly in other services	Mostly construction, the rest spread out over many industries	Exclusively in construction and business services
N of cases in quant. study	156	55	41
Step 2: Qualitative Study			
Illustrative Cases	*CultureShock*	*FutureCare*	*RailAway*
Duration	28 months	42 months	10 months
Size	3 organizations, 11 people of which 1 full time	8 organizations, 500 people of which 450 full-time	4 organizations, 7 people, all of which on a full time basis
Task Uniqueness	Low	Average	High
Budget in €	Small (< 200K)	Big (90M)	Average (6M)
Formality	Informal, no separate legal entity	Formal, project is separate legal entity	Formal, project is separate legal entity
Social Embeddedness	Average-high	High	Low
Industry	Education	Construction	Construction and Transport
Project Goal	Embedding Art and Culture in Educational Curriculum	Construction of a futuristic hospital	One-time raise of railway platforms to fit new require-ments

Through the quantitative latent class clustering approach, I found three major configurations IOPVs, which I label for easy identification by their most salient characteristics: "Routine Informal" (type 1), "Outsized Insulated" (type 2), and "Mini One-off" (type 3). I will describe the three types by their major characteristics below, and illustrate them by the within-case analysis of the case studies that were performed in each type. These are CultureShock (Routine Informal project type), FutureCare (Outsized Insulated project type), and RailAway (Mini One-off project type). All case labels are pseudonyms.

5.4.1 Inter-Firm Project Type 1: Routine Informal (case: CultureShock)

Cluster Profile (Quant. Study). By far the most prevalent class of IOPVs that emerged from the cluster analysis of the quantitative data (62%, 156 cases) concern a kind of routine, small stake temporary project collaborations in which SMEs frequently engage on a day-to-day basis. They are informal, solve mostly routine tasks, and demand a relatively low financial investment. I refer to this type of project as "Routine informal". More specifically, Table 5.5 demonstrates that in contrast to the other types, which mostly are separate legal entities, this type is more informal, with over 93% of them not having a formal legal status. In addition, it is the only type where the tasks that are solved are predominantly of a routine nature (53%), demanding only a relatively small financial investment (smallest budget of all, with almost 32% having a budget of less than EUR 100,000). It is mainly these two dimensions that strongly contrasts this type of IOPV from the others (hence, the label "Routine Informal"). Moreover, this cluster predominantly consists of SMEs with prior ties between them (64%), which reinforces the picture of ongoing, small-stake routine collaboration. In terms of size and duration, the Routine Informal type has a moderate score, falling in between the more extreme Outsized Insulated type (type 2) and the Mini One-off type (type 3). Routine Informal IOPVs are spread out over many industries, but are predominantly found in the other services industry (41%) like theatre and media, and business services (18%).

Case Illustration (Qual. Study). A typical case illustration of an IOPV that very closely fits with the Routine Informal type that I studied through qualitative analysis is project *CultureShock*. CultureShock was an IOPV in the field of education, launched by three separate organizations (school S, cultural foundation C, and the local government LC) that aimed to develop and implement a curriculum that would give students enrolled in vocational training (age 12-23 years) a basic appreciation of art and culture besides their more conventional courses in school S. The ambition behind CultureShock was quite ideological, with both the school, cultural foundation, and representative of the local government expressing a genuine "heart" for culture. They also all were firm believers that if properly applied, art and culture could be instrumental levers to have students become interested in many other areas, like politics, sociology, and math. All organizations expressed that it was very important to find other project partners that shared their ideology. Having worked on previous projects with one another before, and

knowing all of the partners shared the "cultural mind-set" it thus it seemed a logical step to regroup again in CultureShock. "That you already know one another, and that you are all on the same page, makes that the projects run a lot smoother", the director of school S told us. The duration of the project was 36 months, and a very limited budget was available for it.

One of the most salient aspects about CultureShock as being of the Routine Informal type, especially when compared to the other cases, was that the project was informally organized (meaning, amongst others, that the organizations decided to not create a separate legal entity for the project). According to the director of the cultural foundation C: "This project is informal.. very, very informal". The informal nature and the fact that no legal entity was created for it made CultureShock have weak boundaries. Of the 11 people working on the project, only one was assigned to it on a full-time basis. All of the other project participants divided their time by being on the project and by working in the parent organizations, all constituting linking pins that blurred the boundaries between the project and the involved organizations. This was facilitated by the project not having its own physical location, but instead taking place at the participating organizations. In addition, all of the project participants expressed a desire for the project to be fully integrated into the parent organizations in the end, thereby achieving a full merger between the project and its parents. All this meant that organizationally at least, CultureShock remained very closely related to the parent organizations, being part of them rather than becoming a separate entity. As one of the associated school teachers explained: "that's what I like about this collaboration. That you're not some external party that comes in, but that you from within try to put art and education on the radar".

Besides being informal, another salient issue about CultureShock was the routine nature of the project. With regard to this, the assigned project manager was very clear:

> "The basis [for projects like CultureShock] is always the same, the framework is the same: you always start with some acquisition, a kind of proposal, structure, and then you start connecting all the dots by culture and art education. And then is added whatever it is that the curricula want to add to it themselves in terms of education. And we always take the role of director. Well, and then you get the execution-phase, evaluation, and completion. It's always the same".

This highly routine nature of the task stands in stark contrast to the other configurations, and the other cases associated with them, as will become clear from the cross-case analysis presented later. In terms of learning from the CultureShock project, all informants expressed a limited degree of experience accumulation and knowledge creation, but the knowledge that was created was readily articulated, shared and transferred. An issue that was raised quite strongly by two of the informants concerned knowledge leakage from between the organizations in CultureShock. This issue I will

revisit shortly when I analyze the specific learning processes within all of the cases more in-depth.

5.4.2 Inter-Firm Project Type 2: Outsized Insulated (case: FutureCare)

Cluster Profile (Quant. Study). The second type of IOPV that was identified through the quantitative study is less prevalent than the first, and slightly more prevalent than the third, with 22% (55 cases) of the projects in the quantitative sample belonging to this configuration. These IOPVs are big, long-lasting, have a large budget, and organizations tend to only engage in this kind of projects with well-known partners. Compared to the other types, they are amongst others bigger, have longer duration, and have a bigger budget. Moreover, they have, in addition to this, a higher amount of prior ties between partners than the other types. Moreover, these projects often tend to be formed as independent legal entities that are likely to have their own geographical locations. Hence the name "Outsized Insulated".

More specifically, I find that, comparatively, Outsized Insulated IOPVs have the longest duration, with almost 45% taking over 72 months. They are also the largest, resulting from the fact that almost a third of them include over 6 partnering firms, and of all types, this configuration has the highest budget awarded to it (78% has a budget of EUR 10 Million or more). Such large scale endeavours are apparently only engaged in with well-known partners: over 71% of the organizations in this class of projects indicate that they have prior ties with the other partnering organizations. Considering the high-stakes of this type of IOPV, it seems unsurprising that of all types they are most often a separate legal entity (over 73% is a separate legal entity). The tasks this type of IOPV undertakes are a mix between unique and routine, with a small majority of the tasks being unique (56%), falling in between the scores of the other two classes. This type is predominantly concentrated in the construction industry (over 50%), and to a lesser extent in the services (almost 35% combined) and transport and communications (10%) industries.

Case Illustration (Qual. Study). *FutureCare* is a typical case that very closely fits the Outsized Insulated project configuration that was studied in the qualitative case analysis. FutureCare was an inter-organizational construction project that had as its goal the building of a futuristic medical park. The project was born from dissatisfaction with an existing large medical facility which was originally built in 1908, and which was inadequate to keep up with contemporary demands. When the government announced major investments in renewal and innovation in healthcare, the local government, together with an architect and engineer firm, made a design and specification for a new to be constructed Medical Park. After this engineering phase had been completed, the construction project FutureCare was put out to public tender. The tender specified the actual construction of the medical park, which could only be taken by a consortium of organizations. As one of the administrators involved in this process said: "We tried to

approach this problem by one consortium, and we let it up to the market how it was formed. This was very interesting of course, how that game was played". In this game, social networking appeared to be crucial. As the involved planning engineer on FutureCare stated: "Well what you get then, people start calling one another ay? People know one another, boards of directors no one another [..] and the outcome is that the consortium found one another". This underscores how salient embeddedness is for Outsized Insulated projects, and I will return to this later in the cross-case analysis.

The scale and scope of project FutureCare were quite big, with eventually eight organizations joining in into the project, employing a little under 500 people (of which 450 on a full time basis) and a budget of 90 million euro. The total duration of the project was 42 months, between initial preparations of the foundation, to turnkey finishing of the high-tech building. In contrast to the prior case, FutureCare had clear boundaries partly induced by a separate geographical location, in the words of the planning engineer on FutureCare: "You pick a bunch of people up from everywhere, you establish a VOF[21] and you go off sit somewhere in a site hut together. [..] So there really did arise one organization, one unit." The participants perceived of the nature of the task as having both unique and routine elements. In the words of one of the project managers, there was little need to develop new knowledge and novel solutions "because all plans had been agreed upon beforehand". This, as some of the project participants indicated, was typical for this kind of project, which, in contrast to D&C (design & construct) projects, just consisted of the actual building phase. However, while not super new or one-off, on a more detailed level the task was still far from routine, as multiple respondents explained with regard to the actual work done. As the project fore man on FutureCare stated: "They [the administrators in the permanent organizations] might work on routines. We don't. Out here, there is no routine". These characteristics made FutureCare a very insightful case of the Outsized Insulated project type, as I will discuss later in terms of the degree and kind of project-based learning taking place.

5.4.3 Inter-Firm Project Type 3: Mini One-off (case: RailAway)

Cluster Profile (Quant. Study). The third configuration in my taxonomy of IOPVs concerns what some have envisioned as being the most "classical" example of temporary collaboration (Goodman & Goodman, 1976). This kind of project is small, of short duration, performs highly unique tasks, and it has a one-shot exchange character in that it tends to include relative strangers: organizations which have no prior history of working together. For this reason, I refer to this type of project venture as "Mini One-off".

[21] VOF is a "Vennootschap Onder Firma", a specific type of legal entity for organizations under Dutch law.

More specifically, my results indicate that Mini One-off IOPVs have the shortest duration, with most lasting less than 28 months (almost 50% takes 2.3 years or less). These are also the smallest, with 97% of them including only three partnering organizations or less. The one-shot exchange character of these small, short-lived projects is borne from the statistic that these are the type of IOPVs where the least amount of prior ties exists between partnering firms (over 82% of collaborations are not embedded in prior collaboration). Presumably, this is why most of these projects are formalized as independent legal entities (72%), having safeguards in place as the partnering firms have not had the chance to develop trust and experience yet. Moreover, of the three types, this class has the highest amount of task uniqueness (almost 70% of the tasks this type of project solves is unique). This might explain why despite the micro-character of this IOPV, it still has quite a sizable budget (spread out in between the other types). The Mini One-off configuration comprises a little over 16% of all IOPVs (41 cases in our quantitative study), and it is almost exclusively found in the construction (over 70%) and business services (almost 23%) industries. In and of itself, the fact that this kind of project is the least prevalent is intriguing, given the view that this kind of project has been portrayed as the dominant form of temporary organization (see Engwall, 2003 for a discussion of this issue).

Case Illustration (Qual. Study). The aim of project *RailAway,* a kind of project that closely resembles the Mini One-off project type, was a one-time raise of railway platforms in order to meet new requirements set by the government regarding wheelchairs in public transport. The project was initiated by an NGO, which mandated for all trains to be accessible from the platforms for people in wheelchairs without special assistance. The fact that these platforms needed to be raised had a very specific geographical cause: because of the extraction of natural gas in the regions where the platforms were based, they had over the course of decades sunk anywhere between 2 to 8 centimeters. Some twenty organizations responded to the public tender, of which the NGO made a selection of four organizations that were told to form a small consortium that would execute the project. The project spanned a relatively short duration of 10 months, in which all activities needed to be completed, and the consortium formed a separate legal entity that would function as an independent consortium.

Saliently, as per the unique nature of the Mini One-off type of inter-organizational project, none of the four organizations that were selected in the bidding process had ever worked together before. As one of the four project owners mentioned: “We never had any collaboration with [name other partner] or [names other organizations]. [..] We basically went in trusting on each other’s blue eyes”. This led to several challenges during the project.

> “Look, these four parties did not know one another yet, had never worked together before. In the beginning, all four of you go with what you know: ‘Oh well, I’ll use my own sub-contractor’, ‘oh I’ll work with that supplier’ [..] In that way, external parties get linked into your project organization that you

> really don't know. Of which you also don't know: is that guy good or bad?" (Project Manager RailAway).

Besides the organizations having no prior ties between them, all of the organizations in the project also expressed how raising the platforms was a unique and challenging task that they had never dealt with before. Interestingly, all perceived it to be entirely different (and more complex) as compared to building new platforms all together, which all of them had more experience with. A large part of this had to do with the fact that this project was a D&C (design and construct) project, where the design and initial plans needed to be thought out by the project participants themselves as well (in contrast to, for instance, the FutureCare case). "Everything is different [..] there were different heights, and those were also subdivided in 4 steps. The higher the concrete casts, the more armoring, the more anchoring rods it needed. In every detail… it was just... different" said the project foreman on project RailAway. A further complicating factor in working on existing platforms was that in order to work on the location, rails-out-of-service arrangements had to be made, because all railways needed to stay functional during the work. This required a type of construction that would adhere to the existing platform, not come off or tear under further sinking of the soil, while being able to be quickly mounted on site. This unique nature of the task, and the lack of history between the partners, proved to be daunting.

RailAway was perceived by many of the participants as a failure, but this had some very intriguing implications with regard to learning, especially with regard to experience accumulation. I will touch upon these, and all of the other insights with regard to the learning mechanisms that I observed in each of the cases, in the next section. Table 5.5 presents a concise overview of the above.

5.5 Discussion

Learning has been proposed to occur in the interaction between people, tasks, and tools, which' particular constellation together forms the context in which learning should be analyzed and understood (Argote & Ingram, 2000; Tyre & Von Hippel, 1997). It is through this situated learning lens that I in the following will analyze the three dominant configurations of IOPVs, and more specifically, the occurrence and effectiveness of the learning mechanisms that we identified across them. In line with the theoretical frame of this chapter, the discussion is framed around the three mechanisms that are central to organizational project-based learning, namely 1) knowledge creation within the project by experience accumulation, 2) knowledge articulation and sharing between participants within the project, and 3) knowledge codification and the subsequent transfer of this knowledge from the project to the involved organizations before, or immediately after, task completion (Prencipe & Tell, 2001; Zollo & Winter, 2002). Table 5.6 presents an overview of the learning mechanisms in the three types of IOPVs, and the more emergent situated learning mechanisms that I found.

TABLE 5.6
Comparison of Learning Mechanism in each Project Type

	CultureShock (Routine Informal)	*FutureCare (Outsized Insulated)*	*RailAway (Mini One-off)*
Degree of experience accumulation and knowledge creation	**-**	**+**	**+ +**
Degree of knowledge articulation and sharing within the project	**+**	**++**	**-**
Degree of knowledge codification and transfer outside of the project	**+ +**	**-**	**-**
Salient Emerging Mechanisms	Easy transfer of knowledge outside of project, but also **knowledge leakage** as a result of informal nature and weak institutional provisions.	High degree of articulation and sharing of knowledge within project through **insulation** of the project to become a **temporary total institution**.	High degree of experience accumulation and knowledge creation through **unintended learning**

5.5.1 Knowledge Creation and Experience Accumulation within Projects

Experience accumulation, the first and cognitively most basic step in the process of learning, occurred in all three different types of IOPVs, but to very different degrees. Project FutureCare, the project of the Outsized Insulated type, demonstrated an intermediate level of knowledge creation and experience accumulation (Table 5.6). The most telling, however, is the comparison between the case which seemed to have the least amount of experience accumulation and knowledge creation, CultureShock (Routine Informal), and the one with the most: RailAway (Mini One-off). The former, project CultureShock demonstrated only a limited degree of knowledge creation. In line with prior research (Zollo & Winter, 2002) and the phenomenology of experience accumulation as learning by doing and learning by using (Prencipe & Tell, 2001), the reason seemed to be mostly attributable to the routine nature of the project and its task of embedding art in education. This vision was largely shared among the other participants, describing Routine Informal project CultureShock as one very similar to many other projects they had done, both in terms of type of task (task-specific knowledge) and configuration of participating organizations (collaboration-specific knowledge). The experience in CultureShock, so to speak, involved no major changes or alterations in operating routines, and, therefore, while the experiences gained were scripted into the involved organizations, their salience vis-a-vis other projects and experiences seemed relatively low (cf. Lampel et al., 2009). Quite the opposite occurred in project RailAway, the Mini One-off type of IOPV. In this project, the unique nature of the design and construct of raising railway platforms, in which none of the organizations that were part of the small consortium had any experience, formed a huge break from normal routines. The site manager involved in RailAway said that as a result of this learning by doing, "the degree of innovation has been enormous". At the same time, the degree of novel experience accumulation seemed not to be only fostered by the unique nature of the task, but also by the fact that there had not been any previous collaboration between the partners. Interestingly, the fact that none of the organizations had prior ties with one another appeared to be a direct result of the fact that this project involved only SMEs, which on their own could not achieve the project task. The lack of prior ties was vividly illustrated by the RailAway project manager as follows:

> "Every individual partnering organization had its own club, its own history and patterns. And one institutionalizes, processes and communications… and usually we work together with people with which we have worked for years, have shared experiences with. So that is a lot more durable and structured than here [..] When the sea is tumultuous, you need a crew that can collaborate. And if you put four sailors together that have never sailed with one another before, you occasionally sink the ship".

By all accounts, then, project RailAway can be seen as both a rare event task and as a partial failure. Both of these characteristics appear to bolster the unusual degree of experience accumulation and knowledge creation. Because organizations tend to

attribute an uneven degree of attention to rare tasks (Ocasio, 1997), raising the platforms in platform RailAway was likely scrutinized more closely, and, therefore, was more likely to be richly perceived by the involved organizations (Lampel et al., 2009). It was perhaps therefore that all people were interviewed had such vivid memories of the project. In addition, the negative emotions that were inherent to Railaway slowly turning out to be a partial failure could have stimulated search processes and adaptation during the project (Sheperd, 2003), as people tried to match performance to aspiration levels. More generally, it seems that because the task in Mini One-off projects like RailAway is non-routine, this "triggers extensive revision of beliefs and activities when compared to more narrowly and thus less richly perceived events", which can lead to a deep engrossment in the process of experience accumulation and subsequent knowledge creation (Lampel et al., 2009: 839).

What is particularly interesting about project RailAway, however, is that this case demonstrates that not only do rare tasks and partial failures seem to spur novel experiences and knowledge creation, the process whereby this happens can be rather haphazard and unintentional, rather than deliberate and systematic. None of the organizations involved in RailAway ever seemed to have planned for the project to play out like it did. Nor would they likely have engaged in the project at all, had they known all of the problems they ran into. In fact, the knowledge that was created in the project seemed to rely mainly on improvisation in the face of unexpected events, rather than on systematic and intentional learning. Learning seemed to never have been an explicit purpose, or even intended. This has an important implication: leaning might be less of a systematic, deliberate process than the way it is often portrayed in the literature on organizational learning and in project management (e.g. Cacciatori, 2008; Zollo & Winter, 2002). Rather, the "unintended learning" I identify seems to be closer to theories of bricolage and improvisation (e.g. Baker et al., 2003; Baker & Nelson, 2005) than it is to the kind of systematic, deliberate learning that can be found in evolutionary economics and project management. I will return to this issue shortly. First, however, the above leads to the formulation of the first testable proposition:

Proposition 1*: Compared to other project contexts, novel experience accumulation and knowledge creation is particularly prevalent in projects that resemble the Mini One-off type, which are amongst others characterized by small size, highly unique tasks and a low degree of prior ties between the partners. In such contexts, this form of learning can, however, take the form of an unintended and passive rather than deliberate and active process.*

5.5.2 Knowledge Articulation and Sharing between Participants within Projects

The second learning mechanism, knowledge articulation, involves a cognitive effort that is brought to bear on articulating the accumulated experience on the job (Zollo & Winter, 2002). Studying the different cases demonstrates a sizeable degree of variation in the

occurrence and effectiveness of knowledge articulation and sharing between different project contexts.

As mentioned, knowledge articulation in an IOPV context involves a collective endeavour, involving learning by thinking and reflecting, and learning by discussing and by confronting within groups that work on projects (Prencipe & Tell, 2001). In Mini One-off project RailAway, the degree of knowledge articulation and sharing was found to be relatively low. Interestingly, while the degree of experience accumulation and knowledge creation in that project was said to be high by all participants (proposition 1), many of them found it very hard to tell (i.e. articulate) what it was exactly that they had learned, or whether this knowledge had been shared between the project participants. This was due at least in part to the lack of trust. The director of one of the partnering organizations in RailAway told me that "there was quite some distrust between the partners I think. No matter what I said, everybody pointed fingers. [..] There was very little mutual trust in that project". All participants also complained about the lack of a shared "project culture" that did not emerge prior to or during the project (for which it was too short), and the nature of the task that was so unusual that it was hard to embed the newly created knowledge in the extant operating routines. Interestingly, therefore, those same characteristics that proved to be conducive to knowledge creation seemed to subsequently hinder its sharing.

The opposite occurred in the Outsized Insulated project FutureCare, which demonstrated the highest degree of knowledge articulation and sharing of the three project types. There seem to be multiple reasons for this. A first and general reason was that there was that all organizations involved had worked with another before. This provided a knowledge base for all parties to build on, and eased many of the processes going on within FutureCare. As the director of engineering firm E explained: "We chose to work with the same partners. Why? It is a shame to waste that knowledge and know-how that you have, when it is accurate. Look, it's obvious that when things don't work out, you say well OK, I'm going to look for an alternative. But the team was there, the team was good". A second, more intriguing reason, however, for the success of knowledge articulation and sharing within project FutureCare was a practice that I will refer to as "insulating" of the project. FutureCare, by virtue of its separate legal status, its own geographical location, its size, its longevity, and explicit managerial practices, acted as an independent organizational entity with its own "project culture". In the words of FutureCare's manager of installations: "On the construction site emerged a separate organization, an independent culture [..] and this was different than at [name parent organization]". The planning engineer on FutureCare concurred: "This is a very natural process [..] because if you let these people just stay in their own environment, you don't get collaboration, things get hard. Yes, you get the people together and you start. And then, on site, there arises really one team, one unit".

By all accounts, project FutureCare thus acted like what has been referred to as a temporary total institution (Bechky, 2006). Goffman (1961: xiii) defines total institutions as "places of residence and work where a large number of like-situated

individuals, cut off from the wider society for an appreciable period of time, together lead an enclosed, formally administered round of life." FutureCare resembled this closely. First, it was physically and temporally insulated from the outside world, taking place on a remote construction site removed from urban activity. Moreover, because FutureCare had a long duration for a temporary organization (3,5 years), many people remained on site for long periods of time, leaving their homes for extended periods, and the work schedule on site was brutal, often working nights and weekends as well. Both during work as after it, therefore, the project workers mainly socialized with another. In addition, the total institution-like regime of FutureCare was strongly pushed from the upper level. The project director wanted FutureCare to become a separated island: "They [the project workers] work for the project. They need to live for the project. They shouldn't care what their home organizations [the organizations that actually employ the people on a permanent basis] want.[..] And this is the way it has to be, because it is a detached culture. You have an own culture at this work site [..] At t he very start of the project I had people that went to their own boards of directors behind my back. I told them, either you buzz off from this project, or you keep your mouth shut, one of the two". All this together heightened the sense that people involved with FutureCare were part of a temporary total institution, insulated from the outside world.

Being part of a total institution changes the behaviour of project participants (Goffman, 1961). The same happened in project FutureCare, where participants expressed a sense of belonging, mutual trust, and energy. But the reason why this project was deliberately insulated was quite knowledge specific, as the involved project manager explained:

> "Why we put people together in a separate location had a 100% to do with the fact that it makes people interact. It's a big project, you have loads of data to exchange. You don't want to know how many designs are considered. That just takes that you're close together [..] So we had over there [on site] our own design department, with a computer network, printers.. I think we had over 100K in printing expenses, that's a truckload of paper. And exchanging the information hardly works digitally. You always need to talk about it, sketch on paper. They say exchanging designs should be easy, one and one is two, but it isn't, it really isn't".

This clarifies the relation between insulating the project as a total institution and its success in knowledge articulation and sharing: people are forced to interact and to engage in activities that foster knowledge articulation like collective discussions, debriefings, and evaluations. Such confrontations in which viewpoints can be challenged and opinions and beliefs are articulated, foster collective learning (Zollo & Winter, 2002). As Zollo & Winter (2002: 341-342) suggested: "By sharing their individual experiences and comparing their opinions with those of their colleagues, organization members can achieve an improved level of understanding of the causal mechanisms intervening between the actions required to execute a certain task and the performance outcomes produced."

In sum, then, it appears that insulating an IOPV from the outside world to become a temporary total institution, fostering interaction between members, and bolstering a sense of belonging, mutual trust, and a strong project culture, can make certain project contexts to be strongly conducive to knowledge articulation and sharing. This leads to the formulation of proposition 2:

Proposition 2: *Compared to other project contexts, knowledge articulation and sharing within projects is particularly prevalent in projects that resemble the Outsized Insulated type, which are amongst others characterized by large size, intermediately unique tasks, and a separate legal entity and location. Such projects can be insulated to act as "total institutions" that are characterized by high levels of inter-person interaction and a strong project culture that enables the articulation and sharing of knowledge.*

5.5.3 Knowledge Codification and Transfer outside of Projects

Whereas Outsized Insulated project FutureCare was characterized by a high degree of knowledge articulation and sharing within the project (proposition 2), the degree of knowledge codification and subsequent transfer of the knowledge outside the project was less successful. All involved organizations confessed that the knowledge and experience gained was not formally documented or transferred externally after the project. A planning engineer involved stated that:

> "we are just plain bad at that. We are a very bad learning industry. We rush and run from project to project. At [FutureCare] we established something great, but we need to run off immediately to the next project. Because somewhere else foundations have been put in the ground already, and the engineers get pulled off the project before the end. So an evaluation, a pause, a moment to think what went well and what went bad, those are really rare".

As a result, valuable knowledge seems to have been lost when the people working on the project were sent out to new projects immediately after FutureCare, without coming back in to the parent organizations in between. A striking example of the apparent disregard to purposefully capture project-specific knowledge occurred one year after the project, when five of the original eight organizations again agreed to construct a hospital, but the participating organizations sent in entirely different people to do the job.

Another reason why both Outsized Insulated project FutureCare but also Mini One-off project RailAway seemed to demonstrate only a limited degree of knowledge codification and external transfer had to do with the nature of the task, which was moderately (FutureCare) to highly (RailAway) unique. When project tasks are highly unique, there may be less of an imperative to document them for future use, as this use by definition is unlikely or unusual (cf. Lampel et al., 2009) and thus costly (Zollo & Winter, 2002). As the project foreman at FutureCare stated:

> "I think it [transferring the knowledge from the project] is hard. I think it is very hard because everything is different. Project [FutureCare] is a hospital. At the time you're working on the project, you really get into it, you know everything about it. But it is very likely that that little area of which you know everything, doesn't get used within the next twenty years. Next time I might be on a road, or on a bridge, or whatever else we build. That's a totally different job and you don't use any of this. And when the time comes that you do use this stuff again, half is gone and the other half outdated".

The analysis of project Cultureshock of the Routine Informal type suggests that the nature of the project task is an important determinant of the success of knowledge codification and subsequent transfer. Organizations tend to want to retain lessons learned for future use particularly when events are perceived as recurring in nature (cf. Lampel et al., 2009). Especially for project-based organizations, this is an important consideration. Davies & Brady (2000) suggested that when projects roughly demand the same task routines for their repeated execution, project-based organizations can achieve economies of repetition, by transferring lessons learned from the projects back to the organization. The routine nature of project FutureCare seems to be partly nested within the nature of the task and the knowledge that was involved in it. As one school teacher involved with project CultureShock explained: "Using art as a medium to involve school children is for us not particularly new, or very exciting, or hard". This routine, conventional nature of the project task led to a high degree of correspondence between the knowledge bases of the people involved in the project, leading them to have what has in teams research sometimes been referred to as a "team mental model" (Klimoski & Mohammed, 1994). Specifically, we were told that "within the team we have a strongly shared vision about what it is about [..] We really feel that this is what [CultureShock] stands for. And everybody that works for project [CultureShock] would agree" (Involved school teacher, School S.). This shared vision and the routine nature of the task seems to have partly made that project FutureCare was highly successful in codifying the knowledge developed during the execution of the project, and to subsequently transfer this knowledge from the project to the involved organizations. Apart from the nature of the task, however, another element that seemed strongly conducive to knowledge transfer external to the IOPV, was the fact that, in contrast to FutureCare, project CultureShock remained very much integrated with the parent organizations, not having its own location, not forming a separate legal entity, and employing almost all project participants only on a part-time basis. This made that CultureShock only had weak organizational boundaries. Scarbrough et al. (2004) suggested that learning boundaries can arise between projects and parent organizations when projects are only poorly embedded in them. The comparison between project FutureCare (of the Outsized Insulated type, with a low degree of project embeddedness and a low degree of knowledge transfer) and CultureShock (of the Routine Informal type with a high degree of project embeddedness and a high degree of transfer) seems

to align with this notion. In order to span the potential learning boundaries between the project and the organizations involved, project participants on FutureCare held expert meetings and small seminars with members from outside of the project to further disseminate its experiences.

While CultureShock thus demonstrated the highest degree of knowledge codification and transfer of knowledge to the environment of the project, there emerged from the case analysis an interesting downside to this. Because of the informal nature of the project, and the seeming lack of boundaries around it, participants noted that knowledge was not only intentionally disseminated outside the project, but that it also unintentionally "leaked away". The remarks by the director of cultural foundation C were telling:

> "What you see is that the knowledge and content of the project very organically flow inside [names involved organizations]. Apart from the finances, not the hours that go into it, or the products that you deliver, there is something else, and this is flowing away from us. That's a point of concern [..] Actually, on an organizational level I would like to disconnect this [the project from the organizations], because a lot of the knowledge that relates to process is leaking away. Knowledge that is not really within the product. Of course we should spread the word, but there should be limits".

The above directly relates to the limited property rights and appropriability of knowledge as a resource (Spender & Grant, 1996). More specifically, in IOPVs, in which multiple otherwise independent organizations collaborate, institutional arrangements might need to be in place in order to prevent knowledge leakage from happening. Therefore, the routine nature of project tasks, lack of project boundaries and lack of formal institutional arrangements that are characteristic of projects that resemble the Routine Informal type seem to constitute a double edged sword. On the one hand, they seem to allow for easy codification and external transfer of knowledge. On the other hand, there appears to be a heightened risk of unintentional knowledge leakage. This leads to the formulation of proposition 3:

Proposition 3*: Compared to other project contexts, knowledge codification and external transfer of knowledge is particularly prevalent in projects that resemble the Routine Informal type, which are amongst others characterized by routine tasks, high organizational embeddedness, and a lack of formal legal status. Such projects can, however, be characterized by knowledge leakage, in which knowledge is unintentionally spilled over between the project participants.*

5.6 Conclusion

The present chapter started from theories of organizational learning that have suggested that the survival and growth of organizations is to an important extent determined by firm-specific competencies and dynamic capabilities, which are the result of learning processes that determine the firm's ability to integrate, build, and reconfigure itself to address rapidly changing environments (Dosi, 1982; Nelson & Winter, 1982; Teece et al., 1997). It is this notion that seems to contrast with the unique and discontinuous nature of IOPVs that are rapidly becoming more and more prevalent (Whittington et al., 1999). My study of project-based learning indicates that learning in and from projects does occur, but that the specific mechanisms that trigger or hinder learning are very specific to certain IOPV contexts. As Tyre and Von Hippel (1997: 71) famously put it, "learning occurs through people interacting *in context"* (emphasis in original), and indeed I found that different configurations of IOPVs demonstrate different learning mechanisms. Through a mixed-methods approach, I developed an empirically derived taxonomy of IOPVs at the level of the SME, and from a detailed case study of projects that fall within each of the project types, I developed a set of testable propositions that could inform future research in this area. In my view, this study offers at least three important implications.

First, my findings suggest that a substantive amount of project-based learning happens through unintended learning, either from rare events and partial project failures, or through accidental leakage. In both instances, the process of learning taking place was characterized as being a haphazard and emergent process that was forced upon the organization, rather than deliberately designed or planned. This finding has a number of important theoretical implications. For one, it suggests that leaning might be less of a systematic, deliberate process than the way it is usually portrayed in the literature on organizational learning and in project management (e.g. Cacciatori, 2008; Zollo & Winter, 2002). Instead, this study indicates that in the context of inter-organizational projects, with all the uncertainty in terms of task and partners they involve, deliberate learning mechanisms might prove to be extremely costly and uncertain to implement and maintain. Organizations involved in inter-organizational projects rather seem to in many instances learn by unexpected events or failures imposed by rapidly changing conditions. Such unintended learning is closer to theories of bricolage and improvisation (e.g. Baker et al., 2003; Baker & Nelson, 2005) than it is to the kind of systematic, deliberate learning that can be found in evolutionary economics and project management. This finding does not negate recent theorizing on repeatable solutions and economies of repetition that have been proposed in the context of project-based learning (e.g. Brady & Davies, 2004; Cacciatori, 2008; Davies & Brady, 2000). My study in fact supposes that for one dominant type of projects, this might actually be exactly what might be happening. Rather, this research indicates that the process whereby learning actually happens in at least some project-based firms is more uncertain, and less designed, than what studies of deliberate learning have suggested. In short, my research suggests that instead of "learning", in many project contexts organizations

seem to "get learned" by the unexpected or non-routine events that their projects lead them to.

A second implication is that I also find a number of new paradoxes in project-based learning. For one, the same characteristics that make projects that resemble the Mini One-off type very suitable for novel experience accumulation and knowledge creation (highly unique tasks, small size, and few prior ties between the partners involved), subsequently hinder the articulation and transfer of knowledge. Similarly, the same characteristics that make projects that resemble the Outsized Insulated type of inter-firm projects highly suitable for knowledge articulation and sharing within the project (insulated nature, temporary total institution), subsequently create a learning boundary to transfer the knowledge outside the project. Finally, the same characteristics that make projects that resemble the Routine Informal type good at transferring knowledge outside of the project (routine nature of task, no formal legal status, weak project boundaries), also hold the risk of some knowledge unintentionally leaking away even when this is not desirable. It might be interesting to consider how organizations actually resolve these paradoxes. The propositions I offered give some indication, when, and for which types of tasks, a specific type of project venture can be most suitable. Moreover, one could see the three types as being part of one portfolio. This is similar to the notion of a vanguard project (Brady & Davies, 2004) leading to routinized project activities and occasional opportunities to conduct other types of projects. Within one portfolio, organizations could penetrate and experiment on new markets by initiating projects that resembles the Mini One-off type of project at low cost, yielding novel experience accumulation knowledge creation. Many of these projects will not be successful or repeated. For those few that do, however, such a vanguard project might yield access to a new market, on which then more Routine Informal types of projects might be set up in which knowledge can be sustained more easily for the organization. Occasionally, organizations could enter high-stake Outsized Insulated projects when opportunities present themselves, in order for the SME in question to conduct tasks too big or challenging for them to complete on their own, and in order to fully complete the learning cycle.

A third important implication of my study concerns the importance of IOPVs for SMEs. Several of the small firms that were interviewed in the qualitative part of this study indicated that IOPVs for them are *the* most important vehicle to achieve tasks that are otherwise too big for them to achieve because of resource constraints. The majority of research thus far has focused on the kind of learning mechanisms that occur within large firms. This study takes seriously the notion that for SMEs, learning is more of an inter-organizational phenomenon, as they get forced to amend their operating routines to include outside partners to complete the work. This perspective, for one, revealed the issue of knowledge leakage in a project context. It also demonstrates, however, how compared to the studies conducted in large, professional organizations, much of the learning from project work that goes on in SMEs is somewhat messier and accidental rather than deliberate and intentional. This might be related to the fact that SMEs, in

general, are more susceptible to their external environment than large organizations (Barnett, 1997), and therefore more likely to having to manage in an ad hoc and adaptive fashion ("roll with the punches"), rather than pro-actively trying to shape their environment. Given the fact that SMEs employ the majority of the labour force, and are involved collectively in a huge amount of project work, this angle forms a promising avenue for future research as well. Future research could also utilize the same cluster approach as I did in the present study, but for a sample of large firm projects, so findings can be compared and contrasted.

Limitations and Future Research. This chapter has a number of limitations and they should be noted. First, I tried to categorize the main IOPV contexts that exist empirically, reducing the number of theoretically possible configurations to those major ones that commonly occur in practice. In so doing, I believe I am among the first in this domain to try to use quantitative research to generalize from the base of qualitative work that has studied project-based learning. However, future analyses on larger samples might find more sub-types and finer grained cluster solutions than the three-way taxonomy I developed. I believe, however, that by the formulation of the propositions my findings can apply to the majority of IOPVs that exist empirically by leaving open the possibility that projects can to more or lesser extent "resemble" any of the ideal types I found. Related to this, the selection of the cases depended on the probabilistic nature of clustering analysis, meaning that they as closely as possible resemble the cluster profile ideal type, but only to a certain extent. Especially in the least prevalent type of IOPVs (Mini One-off) some minor concessions had to be made in terms of case selection. For this project type we had only 41 cases in the quantitative study, and RailAway might be said to be not "mini" enough because it included four organizations. The fact that all of these organizations only had one or a couple of people actually working on the project (7 people in total) for me justifies treating this case as Mini One-off. The match on all other dimensions was accurate.

Another limitation of this study is that it cannot capture multiple project membership . Because the nature of the quantitative and qualitative analysis was project-centric, I tried to collect as much data from as many sources as possible per project (not per organization). This means that for the projects studied in-depth, I collected data among all participating organizations and members. I did not, however, for every organization collect data on all of their projects. This essentially means that notions such as the one suggested above, claiming that organizations might have all three types of projects in their portfolio in order to complete the learning cycle, are merely speculative. Future research could do well by studying to what extent my clustering analysis applies to firms that are involved in a variety of different network types in different segments of markets depending on their own individual situations.

With chapter 5, I conclude the "macro" part of this dissertation. The large scale empirical studies reported in chapters 3, 4 and 5 have led to a number of new insights, concerning the nature and prevalence of IOPVs, their organizational and industry antecedents, their variety, and their implications for project-based learning. What has

been missing thus far, however, has been a closer look at what happens "inside" IOPVs. This "micro" perspective will be the main focus of discussion of the next chapter.

Appendix to Chapter 5

The LC cluster model has the basic form:

$$f(y_i \mid \theta) = \sum_{k=1}^{K} \pi_k f_k (y_i \mid \theta_k) .$$

where y_i is a subject's score on a set of manifest variables, K denotes the number of clusters, and π_k denotes the prior probability distinguish indicators from covariates, which are two subsets of variables playing slightly different roles in the identification of the clusters. The distribution of y_i given the model parameters θ, $f(y_i \mid \theta)$, is assumed to be a mixture of class-specific densities, $f_k(y_i \mid \theta_k)$. (For an introduction to LC cluster analysis, see Magidson & Vermunt, 2004; Vermunt & Magidson, 2002).

Chapter 6

Diving deeper into the Inter-Organizational Project Venture: Process and Performance in Temporary Teams[22]

> "Everybody knows it's temporary. We all know the deadline, and then we shut down everything here. The whole thing is built up to be broken down. [..] You become one team, certainly, but through it all, in the back of your mind, you ask: for how long will it stay?"

Project engineer on major medical innovation project, on what characterizes being on a creative project team. Interviewed May 4, 2009.

6.1 Introduction

Areas such as new product development (Eisenhardt & Tabrizi, 1995), movie production (Jones, 1996), research & development (Katz, 1982) and academic knowledge production (Wuchty et al., 2007) all increasingly rely on creative project teams to perform the primary production process. A unique characteristic of these projects is that they involve groups of people that are temporarily grouped together around specific tasks to be solved, after which the team disbands and may or may not collaborate again in different compositions later (Baker & Faulkner, 1991; Sorenson & Waguespack, 2006).While the fact that projects are temporary has been recognized as being *the* distinguishing characteristic of project-based organization and project management (Bechky, 2006; Grabher, 2002), dimensions of time and their implications for the way creative project teams operate have remained heavily underexplored thus far (e.g. Bakker, 2010; Jones & Lichtenstein, 2008; Sydow et al.,, 2004). To address this

[22] The conceptual part of this chapter is based on:
Bakker, R.M. & Janowicz-Panjaitan, M. Time matters: the impact of "temporariness" on the functioning and performance of organizations. In P. Kenis, M. K. Janowicz & B. Cambré (Eds.), *Temporary Organizations: Prevalence, Logic and Effectiveness* (pp. 121-141). Cheltenham: Edward Elgar.

The empirical part of this chapter is based on:
Bakker, R.M., Boros, S., Kenis, P. & Oerlemans, L.A.G. "It's only Temporary": Time Frame and the Dynamics of Creative Project Teams. Manuscript under review.

While this chapter, in line with the rest of this dissertation, is written in the first person, this research was conducted in cooperation with Smaranda Boros, Patrick Kenis, Leon Oerlemans, and Martyna Janowicz-Panjaitan.

gap, the present chapter focuses on the perceived time frame of project participants and its effects on project team dynamics by an experimental study of time frames and the activities of creative project teams. In contrast to the previous chapters, which took a macro approach toward understanding this dynamic and which focused on *inter-organizational* project ventures, the present chapter will take a micro perspective in attempting to understand what "temporariness" is on the project level, and the dynamics it creates in the internal functioning and performance of project teams. In so doing, this chapter attempts to fill the primary gap mentioned in the literature review in chapter 2 concerning our lack of data about the implications of temporariness, which is *the* distinguishing characteristic of IOPVs (Jones & Lichtenstein, 2008; Lundin & Söderholm, 1995; Sapsed et al., 2005). It will do so by reporting on the findings from a controlled experiment with managers enrolled at a business school, which echoes the more "micro" character of this chapter.

The concern with understanding time frame in the context of creative projects is fuelled by the fact that, in contrast to other types of projects (such as business, development or change projects), creative projects are often ambiguous and unpredictable, and require a significant amount of within-project planning and intense social interaction (Barrett & Sexton, 2006; Viktorsson et al., 2003). Viktorsson et al. (2003) suggest that as such, creative projects are a very good setting to study developing social processes within projects. I expect time frame to be an important predictor of such social processes and for it to be directly related to the temporary nature of projects. The quotation at the beginning of this chapter, taken from my own previous research on creative projects, illustrates how the temporary nature of projects creates an awareness among project participants that the project they work on is limited in time and scope by a deadline, after which the project is to be disbanded (Janowicz-Panjaitan et al., 2009; Jones & Lichtenstein, 2008). Consequently, with time frame I refer to project teams' anticipation of the termination of their project that is more or less imminent. As mentioned, my running hypothesis in the present research is that project teams that expect to keep collaborating for extended periods of time into the future (long time frame) will behave differently than teams for which the time of termination of the project is more imminent, and that consequently have a shorter expectation of interaction (short time frame). The underlying theoretical reason for this difference is that because temporariness is the central notion around which the definitions of projects and project teams are constructed, time frame is likely to be a core element of the team's shared representations of the relevant aspects of their work together, i.e., the team's mental model or TMM (Nordqvist et al, 2004). A TMM comprises elements regarding the characteristics and demands of the task, the teamwork, and the context. These elements form a mental structure that is shared by the group members and that consequently guides their interactions (Mohammed & Dumville, 2001). Moreover, it is a strong predictor of the way teams organize and perform tasks (e.g. Klimoski & Mohammed, 1994), as TMMs allow team members to coordinate behaviours and anticipate one another's actions especially when time does not permit extensive interaction and

strategizing among the project team (Lim & Klein, 2006). Building on TMM theory, my overall expectation in this chapter is that time frame in creative projects is likely to be an important antecedent of the way interactions and work processes take shape.

My main contributions to current discussions in the fields of management and project-based organization are threefold. First, I build a richer theoretical notion of the temporary nature of flexible and project-based organization by capitalizing on its subjective implications. This is a clear step beyond some of the more conventional notions of time and temporariness in creative projects, which have viewed projects as being temporary simply because they have a beginning and end date (see for instance Lewis, 2000; Young, 2007) or which have ignored the implications of their temporary nature. Instead, and in line with the recent research on the temporary nature of project teams or "temporary organizations" that has criticized oversimplified assumptions of temporariness as merely indicating duration (Bechky, 2006; Grabher, 2004; Schwab & Miner, 2008), I attempt to forward a broader view of the temporary nature of flexible and project-based organization that includes the anticipated time frame it shapes among the members of project teams and its effects on project dynamics. This richer temporal view is especially relevant in the current organizational landscape that revolves around speed, adaptability, change and dynamism, that all hinge on notions of time and temporality (Schreyogg & Sydow, 2010).

A second contribution of this chapter is that I decant the initial impact of time frame from the following iterative processes that occur in project teams. Purely ecological research has a good understanding of the outcomes of these processes (mainly at the end of the project), and the majority of research, certainly in project management, has focused on project performance per se, rather than the specific temporal mechanisms that may trigger it (cf. Nordqvist et al., 2004). The relation between team mental models and team processes is reciprocal: while TMMs shape team interactions and work processes, these interactions further shape the mental model: through the course of their work together, team members entrain their behaviour to one another, changing and adapting their collective cognitive structures (DeChurch & Mesmer-Magnus, 2010). In contrast to previous research, I disentangle between the immediate effects of time frame and the consequences of the unfolding dynamics of project teams and otherwise possibly confounding variables that have to do with the environment or the actual progress of the task and teamwork.

Thirdly, my study also makes a broader contribution to the literature on time and management. A number of researchers have called for a more prominent place for the role of time in management studies (Das, 2006; George & Jones, 2000; Orlikowski & Yates, 2002). Their rationale is that although time is a major dimension of social organization (Zerubavel, 1979) and "as fundamental a topic as any that exists in human affairs" (Bluedorn & Denhardt, 1988: 316), it has yielded relatively few systematic research endeavours in studies of management. Ancona and colleagues suggested that this might have to do with the fact that most empirical studies in our field are "studies of convenience or opportunity" (Ancona et al., 2001: 647). Building on the insights from

the many case studies of creative projects that have recently been documented, my use of an experimental approach to explore the research question offers the possibility to disentangle the primary impact of time frame in collaborative ventures. Experimental control gives the possibility to isolate the temporal dynamic of organizing and to focus specifically on the impact of time frame in the initial stages of collaboration. In my specific context, breaking the overall picture of project team dynamics into more focused relations helps to understand the specific processes that occur in project teams and sets the basis for interventions to improve their functioning.

The remainder of this chapter is organized as follows. The following section provides an overview on time frame in creative project teams and presents the background to the hypotheses. I proceed by describing the research methodology and our empirical findings. I conclude with a discussion of the implications of the findings for current theory development and managerial practice.

6.2 Hypotheses

In order to explain why and how time frame is likely to impact creative project dynamics, theories of team mental models (TMM) are extremely helpful. TMMs help explain team performance by impacting team processes and enabling members to formulate accurate team-work and task-work predictions (Daniels et al., 1994). In essence, TMMs serve as a structure that guides team members' behaviours and ultimately impacts team performance (DeChurch & Mesmer-Magnus, 2010). As mentioned, time frame is likely to be a core element of project teams' mental models, because temporariness is the central notion around which the definitions of project and project teams are constructed (Nordqvist et al, 2004). Through its representation in the TMM, time frame then likely impacts project teams' way of organizing and performing. In other words, because it is a central element of project teams' shared cognitions, I expect time frame to shape the interactions and work process in creative projects (DeChurch & Mesmer-Magnus, 2010).

Being a crucial part of the team mental model, I expect that time frame is likely to impact in two domains of the TMM: the teamwork dimension, and the task dimension. Task TMM refers to the common schema team members have regarding their tasks and the potential role that the broader environment and technology may play. In contrast, teamwork TMM represents a shared understanding among team members about how they will interact with one another, their norms, and roles. In this study, I investigate the impact of time frame on both task-related domains (*time orientation,* hypothesis 1; *task immersion,* hypothesis 2; and *processing of information,* hypothesis 3), and teamwork domains (*team conflict* and *cohesion,* hypothesis 4). These domains will

explicitly build on the themes that have been central to some of the preceding chapters as well: namely time, task, and team.[23]

6.2.1 Time

As has been mentioned frequently throughout this dissertation, time is regarded as being the most salient dimension of temporary organizational forms like IOPVs and temporary teams (Grabher, 2002a; Jones & Lichtenstein, 2008). In temporary teams, time has been variously proposed to be short (Lanzara, 1983) and/or limited (Grabher, 2004a), but at the very least different (Miles, 1964) from how it is conceived of in other organizational forms. Because time is in itself an arcane concept, I will focus here on one specific way in which time plays a role for project teams, namely by their *time orientation.*

Being a component of the TMM, time frame is likely to shape the interactions between team members of creative project teams, their norms, and their expectations. Time orientation captures the degree to which a team is focused on the present rather than the future (Twenge et al., 2003). Time orientation is different from time frame in the sense that time frame is a component of the TMM, whereas time orientation is an emergent state that develops from it.

Previous research has demonstrated that temporary project teams can have a short-term orientation with a focus on immediate deliverables, because completion by a scheduled due date is one of the most frequently used measurements of project success (Nordqvist et al, 2004). A team's time orientation, however, is both subjective and malleable (Ebert & Prelec, 2007), as "future [..] events have an impact on present behavior to the extent that they are actually present on the cognitive level of behavioural functioning" (Nuttin, 1985: 54). One could argue that members of project teams with a shorter time frame are less likely to focus attention to the future than members of teams with a longer time frame; for instance, by worrying about how current behaviour within the team might play out in future discussions. In a project context with a short time frame, there is also little opportunity for the postponement of activities (DeFillippi & Arthur, 1998). This is all likely to draw temporary team members' attention toward the present and, therefore, a shorter time frame likely creates a narrowed time perspective among their members. As Miles (1964: 457–458) stated a while ago with regard to projects with a short time frame: "the person lives more in the psychological present, coping with immediate demands and simultaneously forgetting the past and neglecting plans for the future".

In sum, I expect that on average, members of creative project teams with a shorter time frame are less likely to orient attention on the distant future and more on the present. This leads to the formulation of hypothesis 1:

[23] Being a controlled experiment, "embeddedness" (the fourth theme) is controlled for by the lab conditions of the present study

Hypothesis 1*: Short time frame has a positive effect on present time orientation: all things being equal, creative project teams with a shorter time frame are relatively more likely to focus on the immediate present than creative project teams with a longer time frame.*

6.2.2 Task

The main motivation for the initiation of a project team usually is a task that must be accomplished (Lundin & Söderholm, 1995). A team's attitude toward the task it must accomplish is thus crucial to consider if one is interested in understanding and explaining temporary team dynamics. I consider two crucially important task related variables in this regard, *task immersion* and the *processing of information*.

Task immersion refers to the extent to which teams are absorbed in a task at hand (Mainemelis, 2005). Task immersion increases the likelihood of various dimensions, angles and solutions being explored and appreciated in the context of their work (Mainemelis, 2005), and thus significantly impacts the effectiveness of teams.

There are two reasons why creative project teams with a short time frame are more likely to be highly immersed in a task than project teams with a longer time frame. First, as was mentioned (Hypothesis 1), because of the short time frame for working as a team, project teams with a shorter time frame are primarily focused on elements that relate closely to the accomplishment of an immediate task, rather than the building of relationships or long-term team satisfaction (Saunders & Ahuja, 2006). This attention focus is likely to deeply immerse temporary teams in the task in order to secure a rapid completion (Saunders & Ahuja, 2006).

Second, because creative project teams with relatively shorter time frames are more likely to be focused on the immediate here and now, such teams are likely less distracted by expectations of or thoughts about future events. Immersion requires a period of uninterrupted engrossment in the activity, which is heightened by a strong focus on the immediate present (Mainemelis, 2001). Consider how not worrying about the long-term future of one's project frees up "brain space" to focus fully on the present activity (Janowicz-Panjaitan et al., 2009). As a consequence, hypothesis 2 predicts a positive effect of short time frame on task immersion:

Hypothesis 2*: Short time frame has a positive effect on task immersion: all things being equal, creative project teams with a shorter time frame are relatively more likely to be highly immersed in a task than creative project teams with a longer time frame.*

The second task related factor considered here, *processing of information,* is a crucial team characteristic in the way it relates to the task teams work on. Information, and the way in which teams process it, is a prime driver of attitudes and it has an established relation with team effectiveness (Griffin et al., 2002).

A common distinction in information processing is between heuristic and systematic processing. Systematic processing entails a broader effort to evaluate and understand information, whereas heuristic processing involves the use of simple decision rules to form judgments (Griffin et al., 2002).

One of the basic conditions that prompt heuristic vs. systematic processing is time constraint: insufficient time resources lead people to process information in a heuristic, rather than systematic manner (Ratneshwar & Chaiken, 1991). This happens because time pressure prevents in-depth cognitive elaboration, increases the filtering and selection of information (to reduce the complexity of the situation to a manageable level), and accelerates processing (hence leading to less alternatives considered and a larger probability for mistakes not to be noticed). Therefore, I expect creative project teams with a shorter time frame (with the ensuing present time orientation predicted in Hypothesis 1), to be less likely to process and evaluate information very elaborately, and instead to be more likely to process information heuristically, when compared to creative project teams with a longer time frame. In other words, I suggest that awareness of a short time-span in temporary teams leads to a focus on immediate action and task completion (rather than elaborate task related processing), which creates a sense of "haste" that favours a more heuristic type of information processing. In other words, the saliency of time, action, and the immediate present to project teams with a short time frame (Hypothesis 1) increases the probability of heuristic processing in creative projects. Therefore, I expect that:

Hypothesis 3: *Short time frame affects processing of information: all things being equal, creative project teams with a shorter time frame are more likely to process information relatively more heuristically, whereas creative project teams with a longer time frame are more likely to process information systematically.*

6.2.3 Team

The third theme, team, is obvious in the context of this study of temporary team processes. With regard to teamwork, previous research has demonstrated that project teams tend to experience less cooperation between the parties involved (Heide & Miner, 1992), and experience more relational conflict and develop less regulatory strategies (Druskat & Kayes, 2000) than ongoing or functional teams. Primarily, *team conflict* has a different dynamic in temporary project teams as opposed to stable or open-ended teams (Druskat & Keyes, 2000). As team members know that other parties will not have an opportunity to reciprocate or retaliate later, the shorter perspective of time working together in teams with a short time frame can often give rise to opportunistic behaviour and team conflict (Heide & Miner, 1992). Team conflict can have negative effects on a number of very relevant team-based outcomes, especially team cohesion (Ensley et al., 2002).Team cohesion is particularly important to project teams, as such teams have to quickly achieve tasks while dealing with the diverse expertise and knowledge bases of their members (Sydow et al., 2004).

I suggest that the relation between conflict and cohesion in creative projects is moderated by time frame. In project teams with a long time frame, conflict is likely to be strongly negatively related to cohesion, since cohesion is a function of affective interpersonal relationships. For teams with a shorter time frame, however, conflict can be less detrimental (Saunders & Ahuja, 2006). Knoll & Jarvenpaa (1998) found that when conflict occurred in extremely short-lived teams, team members tended to ignore it. This seems to indicate that because members do not anticipate to be working together again in the future, project teams with a relatively shorter time frame are less likely to be concerned about it (Saunders & Ahuja, 2006). This argument does not imply that teams with a relatively shorter time frame experience lower absolute levels of conflict than teams with a longer time frame. However, while such teams are just as likely to experience conflict, it affects cohesion to a lesser extent, because it is less salient to the team's goal and focus. Therefore, I expect team conflict to negatively influence team cohesion, but to a lesser extent in teams with a short time frame. Hypothesis 4 follows from this:

Hypothesis 4*: Short time frame moderates the negative effect of project team conflict on project team cohesion: all things being equal, the negative effect of team conflict on cohesion is relatively weaker for creative project teams with a shorter time frame than teams with a longer time frame.*

6.3 Method

6.3.1 Sample and Design

Because the nature of the above set of hypotheses required a research design in which the impact of time frame could be isolated and causally linked to team dynamics, I opted to conduct an experiment to test my hypotheses. This experiment complements the many excellent case studies that have been recently conducted on creative projects (see Chapter 2, for a review of this literature).

Between September 2008 and December 2009, an experimental study was conducted to test the hypotheses. A total of 267 subjects (85 women) participated in the study. Participants' age varied from 23 to 68, with a mean age of 39. These subjects were managers enrolled in executive master programs of TiasNimbas Business School, where the study was a voluntary part of the introduction to their program. I opted to undertake the study with experienced managers as a manner of increasing the validity of my findings. In the experiment, managers will bring routines and tacit assumptions about project teams they have formed and participated in in real life. This way, these tacit assumptions about project work that an experienced manager has (as opposed to students, whom we consider novices for this type of work) are also present in the group interactions that I studied, increasing the ecological validity of the findings.

The 267 managers were assigned to 89 three-person teams, which were in turn randomly assigned to one of two experimental conditions in which I manipulated the

teams' time frame (short vs. long expectation of working together as a team). Teams were formed according to two criteria: having similar degrees of variance between all the teams (with respect to age, gender and educational background), and having equivalent teams (with regard to age, gender and educational background) between the experimental and the control condition. This way, I ensured equivalence between the two conditions both in terms of overall sample distribution as well as within particular teams. Data on age, gender, and educational background was obtained prior to the study from the registrar of the school.

6.3.2 Manipulation, Procedure, and Data Collection

In the first week of their curriculum, incoming executives enrolled at TiasNimbas Business School executive master programmes were assigned to a three-person creative project team. All teams were instructed that they would work on a creative task, for which they had 45 minutes, and which asked for a written deliverable. Moreover, they were instructed that throughout the one year programme in which they were enrolled, there would be more of such team assignments. This essentially created the "space" for their anticipation of continued collaboration.

I manipulated time frame through different instructions regarding the teams' expectations of working together. Specifically, at the start of the 45-minute task, half of the teams received the instruction that they would only work together in that particular group composition for that particular task. After completing that task, the instructors would re-shuffle the teams for other group work during the rest of the academic year, and none of the participants would be working together with any of her/his teammates again. These teams' time frame, therefore, consisted of one day, on which the task needed to be completed and after which the team was disbanded. The other half of the teams, in contrast, received the instruction that they would work together in the same team composition for the entire program. These teams' time frames, therefore, were manipulated to be one year (i.e. the length of the programme). We assessed the effectiveness of this manipulation with a manipulation check, which consisted of three questions: the length of time their collaboration as a team would last (the actual manipulation check), how long the task would take, and what the main purpose of the task would be (masking questions). Five groups provided an incorrect answer to the manipulation check question and were deleted from further analyses. This manipulation check was in fact the test that time frame did in fact translate into the team mental model.

The task on which the teams worked consisted of a fictitious business case in which the project teams were asked to come up with a campaign strategy for Google, a campaign budget, and a newspaper-style advertisement, which challenged the group to come up with the most creative proposal. After 45 minutes of working on the task, the teams were asked to fill out a questionnaire and they were debriefed by the experimenters. In

the debriefing, the subjects were informed that the instructions they had received had been false, and they were informed of the study's research question.

6.3.3 Measures

Besides time frame, which was experimentally manipulated, this study measured the following variables:

Time Orientation. The measure of time orientation included seven items, four of which were adapted from Twenge et al., (2003), and three that were adapted from Mainemelis (2005). The scale included items such as "I thought a lot about what I would do after the task was finished" and "During the task I could only think about the state of the project at that present moment". Items were scored in the direction of higher values indicating a more present time orientation. Cronbach's Alpha of the scale was .60.

Team Conflict. I assessed the level of team conflict with eight items adapted from Jehn (1995), which included items such as "How often did the people on your team get angry?" and "How often do the members of your team disagree about how things need to be done?". Higher scores on this scale corresponded to higher levels of team conflict. The alpha of the scale was .70.

Team Cohesion. The measure of team cohesion consisted of four items adapted from Carron et al. (1985), and included items such as "Members of our group would like to spend more time with one another when the group task is finished." and "Our group joined together in achieving a high quality final product". Higher scores on these items indicated higher team cohesion. The alpha of the resulting scale was .69.

Task Immersion. Task immersion was measured by a three item scale adapted from Mainemelis (2005) and consisted of the following items: "I was intensely concentrated in the activity", "All my attention was invested in the activity", and "I was completely absorbed in the activity". Higher values corresponded to higher levels of task immersion. The resulting scale we found to be internally consistent (Cronbach's Alpha = .67).

Processing of Information. Information processing was measured by a six item scale adapted from Griffin et al., (2002), which consisted of items such as "After I encountered the information on the task, I first stopped and thought about it" and "When I read the information for the task, I focused only on a few key points". Items were coded such, that higher values on this scale corresponded with a heuristic mode of information processing, whereas lower values corresponded with a systematic mode of information processing. The resulting alpha of the scale was rather low (.47), and therefore should be regarded with caution. Given extensive tests of this scale, however (see Griffin and colleagues, 2002), I did decide to retain the scale in the analyses.

For all these scales, I aggregated the individual scores to team level by computing mean team scores.

6.4 Results

Table 6.1 reports the pooled descriptive statistics and correlations for the variables under study. Tables 6.2 through 6.4 report the specific tests for the hypotheses.

TABLE 6.1
Descriptive Statistics and Pairwise Correlations[a]

Variable	Mean	s.d.	1	2	3	4	5	6
1. Time Frame (manipulation)	.51	.50						
2. Time Orientation	2.40	.39	.213					
3. Task Immersion	3.60	.55	-.222*	-.030				
4. Processing of Information	2.90	.33	.182	-.155	-.481**			
5. Team Conflict	1.67	.30	-.138	.267*	.052	-.111		
6. Team Cohesion	4.09	.39	-.041	-.005	.392**	-.194	-.318**	

[a] n = 84 teams.
†. $p < .10$
*. $p < .05$
**. $p < .01$

Hypothesis 1 stated that creative project teams with a relatively shorter time frame would be relatively more likely to focus on the present than those with a longer time frame. The findings support this hypothesis: creative project teams with a shorter time frame and those with a longer time frame differ significantly with respect to time orientation ($p < .05$), teams with a shorter time frame had a significantly higher orientation toward the present (see Table 6.2).

TABLE 6.2
Summary Table of Independent Samples t-tests of Time Orientation, Task Immersion and Processing of Information

	Temporary/Open-Ended team	N	Mean	s.d.	Indep. samples t-statistic of mean difference
H1: Time Orientation	Long Time Frame	42	2.31	.41	-1.96*
	Short Time Frame	42	2.48	.36	
H2: Task Immersion	Long Time Frame	42	3.72	.42	2.06*
	Short Time Frame	42	3.48	.63	
H3: Processing of Information	Long Time Frame	42	2.84	.32	-1.68†
	Short Time Frame	42	2.96	.33	

†. $p < .10$
*. $p < .05$
**. $p < .01$

The formulation of hypothesis 2 indicated the expectation that on average, creative project teams with a relatively shorter time frame would have a higher level of task immersion than those with a longer time frame. Contrary to this prediction, I found that creative project teams with a longer time frame were significantly more immersed in the task compared to those with a shorter time frame ($p < .05$; see Table 6.2).

Hypothesis 3 stated that creative project teams with a shorter time frame would be more likely to process task information relatively more heuristically compared to creative project teams with a longer time frame that would process information more systematically. Our results were in the expected direction, albeit only marginally significantly (see Table 6.2). Teams with a shorter time frame demonstrated an accentuated preference for heuristic processing, whereas teams with a longer time frame processed information rather systemically ($p < .10$).

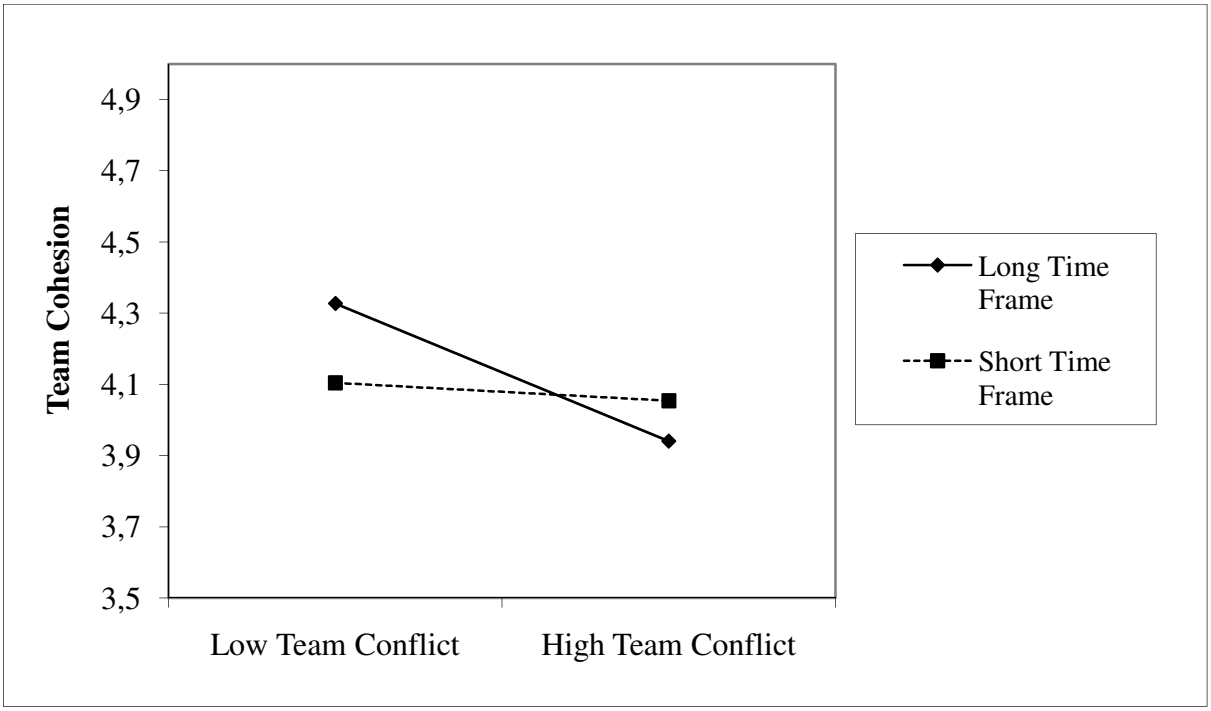
TABLE 6.3
OLS Regression Model of Team Cohesion (H4)

Model/Step	Team Cohesion	
	1	2
1. Time Frame (Short/long)	-.08	-1.28*
Team Conflict	-.33**	-.51**
2. Time Frame * Team Conflict		1.20*
F change	4.93**	4.25*
R^2	.11	.15
AdjR^2	.08	.12

†. $p < .10$
*. $p < .05$
**. $p < .01$

Hypothesis 4 stated that a shorter time frame for working together as a team would moderate the negative effect of team conflict on team cohesion. In order to test this hypothesis, a regression analysis was conducted with cohesion as dependent variable. As Table 6.3 shows, both the time frame manipulation (long vs. short time frame) and group conflict had a negative and significant main effect on team cohesion ($p < .05$ and $p < .01$ respectively), as did the interaction between them ($p < .05$). Hypothesis 4 hence received empirical support (see Figure 6.1): a shorter time frame moderates the negative effect of team conflict on cohesion in such a way that the negative effect of team conflict on cohesion is weaker for creative project teams with a shorter time frame than for those with a longer time frame.

FIGURE 6.1
The Moderating Effect of short Time Frame on the Relation between Team Conflict and Team Cohesion (H4)



6.5 Discussion

The quotation from which I started this chapter, expressed by an engineer that was interviewed on a previous research project on creative projects (Chapter 5), vividly captures my research interest in the temporary nature of creative projects. According to recent work, a key advantage of such temporary projects is that they present a break from normal routines and prevent the lock-in effects of people working together over extended periods of time that can stifle innovation and creative problem solving (Skilton & Dooley, 2010). Moreover, creative projects grant a possibility of flexible and low-cost experimentation with new designs, which should promote "excellent preconditions for creating new knowledge" (Sydow et al., 2004: 1481). It should come as no surprise, then, that a project-based mode of work organization has pervaded many industries in the economy, from traditional project-based industries such as film making (Sorenson & Waguespack, 2006), theatre (Goodman & Goodman, 1976), and construction (Gann & Salter, 2000), to industries such as software development, advertising, biotechnology, consulting, emergency response, fashion, television and complex products and systems (Grabher, 2004; Hobday, 2000; Sydow & Staber, 2002; Weick, 1993). What sets the primary mode of work organization in these industries apart is the fact that production revolves around projects that temporarily group together participants in a transient constellation. Apparent from anecdotal evidence

from case study research, this temporary nature "does something" to these teams (Bakker, 2010). This makes this experimental study on the impact of time frame representation in the team mental models of creative project teams of theoretical and practical importance to our understanding of project-based organization.

This chapter started from the assumption that time frame is not just an objective dimension, but that it is one of the core elements represented in a team's mental model (TMM). The manipulation check indeed confirmed that the time frame instruction was immediately adopted in the team's representation of the context and condition of the task. Based on the teams' representations of time frame, the specific findings from this experimental study indicate that in comparison to creative projects with a relatively longer time frame, creative project teams with a shorter time frame have a time orientation that is more focused toward the present (Hypothesis 1), are immersed less in the task at hand (Hypothesis 2), and employ a more heuristic mode of information processing (Hypothesis 3). Furthermore, time frame was confirmed to moderate the negative effect of team conflict on cohesion (cf. Hypothesis 4). These findings hold a number of important implications for theory and practice that I will discuss below.

6.5.1 The temporary Nature of Creative Projects

In line with the recent research on the temporary nature of project teams or "temporary organizations" that has criticized oversimplified assumptions of temporariness as merely indicating duration (Bechky, 2006; Grabher, 2004; Schwab & Miner, 2008), this chapter developed a broader view of the temporary nature of flexible and project-based organization that includes the anticipated time frame it shapes among the members of project teams and its effects on project dynamics. Overall, my findings indicate a general pattern which suggests that the representation of time frame in the TMM of creative project teams is an important antecedent of team dynamics like task immersion and the processing of information. As such, the findings confirm that research should study the temporary nature of projects as pertaining to more than them just having a clear beginning and end (cf. Lewis, 2000; Young, 2007). There is an interesting analogy here with the broader literature on time and management, which has convincingly argued that time and temporality have both an objective and a subjective capacity (see, for instance, Ancona et al., 2001; Orlikowksi & Yates, 2002). The objective capacity (also referred to as "natural", "even", "chronological", or "clock" time) is characterized by the assumption that time is independent from mankind and relates to "Newtonian assumptions of time as abstract, absolute, unitary, invariant, linear, mechanical, and quantitative" (Orlikowski & Yates, 2002: 685). The subjective capacity of time reflects the experience of time by individuals and groups (Ancona et al., 2001), and the way they represent it in their mental models. Along the same lines, this study suggests that beyond "objective" notions of duration between start and end date, the temporary nature of creative endeavours shapes a subjective representation of the ex ante defined, and therefore explicitly anticipated, limited period of interaction between project

participants (what I referred to as time frame reflected within the TMM), and that this time frame in turn influences team dynamics. An interesting venue for future research would be to see whether such different time frames, through the team dynamics that were the subject of this chapter, also translate into performance differences between creative projects with varying time frames.

6.5.2 Project-based Learning

An intriguing finding of this study concerns the test of hypothesis 1: creative project teams with a shorter time frame are more likely to focus on the immediate present. I believe that this finding holds important implications for the rapidly growing body on project-based learning (e.g. Cacciatori, 2008; Prencipe & Tell, 2001).

Recent case study based research in the domain of project-based learning and knowledge transfer has frequently observed that although creative projects are tasked with having to come up with creative products, knowledge and solutions (Grabher, 2004; Hobday, 2000; Ivory et al., 2007; Scarbrough et al., 2004), they frequently experience particular difficulty to sediment this knowledge and lessons learned for permanent use when the project is over. Oftentimes, projects disband and people move on to working on different projects before lessons learned are adequately captured (Grabher, 2004). As such, project managers are often faced with having to keep "re-inventing the wheel" over subsequent projects (Cacciatori, 2008). On the organizational level, project-based organizations often struggle to develop routines and integrate distributed knowledge, which, therefore, impedes learning (Newell et al., 2004).

My experimentally developed finding that creative project teams with relatively short time frames have a time orientation that is focused more on the present offers a theoretical micro-foundation that can help to explain these observations. Forced by the demand for speed and flexibility, many real-life projects have relatively short life-cycles and time frames (see Chapter 3). Based on my findings here, such a short time frame makes it plausible that many creative project teams focus more on immediate present-day problems and concerns, rather than on how potential solutions or lessons learned might be preserved for future use. This partly explains the difficulty that many projects experience in transferring lessons learned to subsequent projects. This issue also presents a managerial implication: if the goal of a creative project is to successfully transfer knowledge and preserve it after the project completes, project workers should be explicitly asked to focus on and think about the future in order to prevent them from being overly concerned just with the here and now. This strategy might improve the success rate of other well-known (but in practice sometimes neglected) knowledge retention mechanisms such as evaluations, databases and other memory objects (Cacciatori, 2008).

6.5.3 Project Focus: Process versus Task Completion

One area in which my findings, at least at first, seemed to deviate from expectations concerned task immersion. Specifically, a puzzling finding of the present study is that creative project teams with a relatively shorter time frame have a significantly lower level of task immersion than open-ended teams, contrary to what I expected (cf. Hypothesis 2). This calls for interpretation.

One possible explanation may lie in the focus of the project. My general expectation was that creative projects with a relatively shorter time frame would be more likely to invest relatively more attention to the task at hand. The current findings suggest that this statement should be refined. An alternative proposition would be that creative project teams with relatively short time frames are more likely to focus on task *completion*, rather than the process that leads to it. Lundin & Söderholm (1995) argued that if there is one common denominator in projects and project management, it is that there is an imperative and immediate need for action induced by a short time of interaction between individuals. Project teams with short time frames immediately jumping into action would limit their ability to elaborately and systematically focus on the process by which the task is most efficiently executed. Rather, the focus is on getting the work done. In other words, when the focus of the project is disentangled between process and completion, one might conjecture that project teams with a shorter time frame are more likely to be engaged with task completion than the planning or execution of the task itself (i.e. process).

An intuitively similar implication may also be drawn from the confirmation of hypothesis 4: the cohesion of creative project teams with a relatively shorter time frame is affected to a lesser extent by conflict than the cohesion of project teams with a longer time frame. This seems to indicate that shorter time frames elevate the importance of completion over process, both in terms of team consequences of the TMM (as indicated by conflict and cohesion, hypothesis 4) as well as in terms of task consequences of TMM. With regard to the latter, this revised perspective nicely aligns the findings with regard to task immersion (Hypothesis 2) with those on information processing (Hypothesis 3). As my findings demonstrated, the focus on task completion in creative projects with a short time frame seems to involve a shallower, heuristic mode of information processing. The focus on task process that goes with creative project teams with a relatively longer time frame involves a deeper, systematic investment in the processing of task relevant information. In the effort to understand the functioning of creative projects, future research on creative projects would do well to make the distinction between task and team process and task completion, and more extensively study its implications.

6.6 Conclusion

The temporary nature of creative projects, despite being so typical and important to the more and more common project-based organization, has received relatively little attention thus far. In the present chapter, I attempted to open the black box surrounding the time and temporality of such endeavours by going beyond "objective" notions of project duration to the more "subjective" time frame it shapes among project participants. My empirical study of 84 creative projects teams demonstrated that time frame is a strong predictor of important project dynamics: time orientation, task immersion, information processing and cohesion. Moreover, as I discussed in the preceding section, these findings have important theoretical implications for our understanding of the temporary nature of creative projects, the increasingly important subject of project-based learning, and project focus.

To conclude, the central message of the present work holds that, in the words of the project engineer from which we started this chapter, it is "for how long will it stay" that is a crucial, yet understudied, issue that impinges on the functioning of creative projects. I look forward to future work which will build on mine toward a more full-fledged understanding of creative projects and their temporalities. The current findings already do, however, supplement the findings reported in the previous chapters by taking a radically different micro perspective toward the subject of study. The next chapter, which will conclude this dissertation, will take a step back and integrate the main findings from the this and the other individual chapters into an overall set of conclusions.

Appendix 1 to Chapter 6: Experimental Task for Project Teams

Dear project team,

The goal of this assignment is to come up with a campaign for a range of newspaper ads for the company Google. Please read the case and instructions carefully. The case is fictitious.

Imagine that Google, the U.S. internet firm, has recently seen a decline in profit. To regain this loss, Eric Schmidt, Google's CEO, believes that Google should attract a new audience to their websites, namely: elderly (age 65+). Seniors are becoming a bigger and bigger economic force in today's economy, yet lack behind in the amount of hours they spend on the internet.
Schmidt proposes that when Google would be able to get more elderly online and toward Google's web pages, this would attract many new companies to buy advertising space from Google, boosting profit. For the Netherlands, Schmidt makes available EUR 500,000 to come up with a campaign for newspaper ads, to appear in all national newspapers. Here is where you come into play.

Google has organized a "pitch". A pitch is a contest where many advertisement agencies attempt to get a contract by sending in their ideas. Whichever advertisement agency comes up with the most creative proposal for the ads, will get the job and the money to run the campaign. You are an advertisement agency management team competing in the contest.

Your assignment will consist of three phases:

- (1) To come up with a *campaign idea* for the ads. Explain which issue(s) your ads will address, what will be the focus and style of the campaign, and why and how your campaign will succeed in getting the seniors online.
- (2) Elaborate one *ad* as you would have it appear in the newspapers. The A3 size sheet of paper on the table represents an empty page of a newspaper. Fill it as the ad would look like in the newspapers. The ad can take up a maximum of 1 full newspaper page (A3). You can use the other sheets of papers for practise. Be creative! Use whatever you think will convince Google to award you the money.
- (3) Draw up how you would spend the *budget* if Google would award you the money. What's your take? How much would go into the different stages of the campaign?

Please remember:

- the end products are what you hand in on paper, there is no presentation, so make sure that someone can understand the campaign idea, ad and budget, from what you produce
- the assistants running the assignment cannot help you with the assignment
- you can not talk to other – competing! – groups during the assignment
- you only have 45 minutes available to work on the task and produce the three items.

Good luck!

Appendix 2 to Chapter 6: Creativity Evaluation Form

GROUP NO. : .....
Please fill out the group number as reported on the products.

1. PRODUCT: CAMPAIGN-CONCEPT

Please score each product on the following criteria from 1 (poor) to 5 (excellent)

A) FOCUS 1 2 3 4 5
Is the content of the campaign idea meaningful, and focused on one, or a couple, of key elements? Does the focus fit with the assignment?

B) NOVELTY 1 2 3 4 5
Is the content of the campaign idea unique, original and uncommon, and can it attract attention?

C) APPLICABILITY 1 2 3 4 5
Is the campaign idea realistic? Can it be applied?

D) STYLE 1 2 3 4 5
Does the campaign concept have a clear style? Does this style fit the target group and the assignment?

OVERALL CAMPAIGN-CONCEPT: (GRADE 1 TO 10) **.....**

2. PRODUCT: ADVERT

A) TONE OF VOICE / COPYWIRTING 1 2 3 4 5
Does the text in the ad form send an understandable message for the audience? Does the copy writing fit with the intended target group? Does it have the proper tone?

B) GRAPHICS 1 2 3 4 5
Hierarchy; are certain important graphical elements emphasised over others? Is the available space filled well? Are colours used well?

C) NOVELTY 1 2 3 4 5
Is the execution of the ad unique, original and uncommon, and can it attract attention?

D) CONSISTENCY 1 2 3 4 5
Does the ad convey a clear and consistent message? Do the text and the graphics convey the same message?

OVERALL ADVERT: (GRADE 1 TO 10) **.....**

3. PRODUCT: BUDGET

A) RIGOUR 1 2 3 4 5
Is the budget well thought through? Is the reach been thought about? Are different media types considered?

B) REALISM 1 2 3 4 5
Is the budget realistic?

C) CONSISTENCY 1 2 3 4 5
Is the entire budget spent, is it coherent, is it consistent?

OVERALL BUDGET: (GRADE 1 T0 10) **.....**

OVERALL GRADE **(GRADE 1 TO 10) .....**
Overall performance on the assignment, taking into account whether the three products are consistent and fit together in a meaningful way.

Space for remarks:

Chapter 7

It's only temporary: Conclusions from a temporary PhD Project

And so, after almost 3,5 years of research and 54,592 words in this dissertation, this project will come to an end. I knew from the outset that the project would be temporary, and would be disbanded upon task completion; I seem to be close to reaching that state.

I started this dissertation from a broad, macro perspective, describing how over the last 80 years, organizations have moved from functioning as fortresses walled off from outside groups to them functioning as network organizations, frequently involving other organizations in almost every stage of the production process (Powell et al., 1996). As Raab & Kenis (2009) mention, this evolution from a society of organizations toward a society of networks typifies the changing ways in which economic actors have tended to design organizational solutions to "get things done". For years, students of organization have studied this increased collaboration and networking amongst organizations. With little exception, however, this literature has tended to view collaboration as being stable and open-ended (Schwab & Miner, 2008). It is this notion that the present dissertation likes to challenge.

More specifically, ever increasing environmental volatility, uncertainty in demand, and a demand for unique solutions tailored to specific problems, have given rise to a new form of inter-firm collaboration that I labelled the IOPV in this dissertation. As Raab & Kenis (2009) mention, the governing logic of this new way in which organizations get things done revolves around memberships of temporary inter-firm constellations that have an ex ante defined limited period of existence and which get disbanded upon task completion (Jones & Lichtenstein, 2008). The reality that this form of organization exists has presented organizational scholars with a clear imperative to consider temporary, inter-firm arrangements as a distinct mode of organization, worthy of academic attention. The present dissertation was an attempt to further our understanding of organizational form by a multi-method examination of its nature, antecedents, prevalence, diversity, and distinctiveness.

In this final chapter, I will tie together the preceding chapters and the main conclusions of this dissertation and provide an answer to the research question that guided this project: *Where do inter-organizational project ventures come from, in which varieties do they come, and what are their learning implications for the people and organizations involved in them?*

More specifically, I will in the following note six areas where my research has, in my belief, yielded novel insights:

1. Organizational Learning Theory
2. The nature of IOPVs (what they are)
3. The antecedents of IOPVs (where they come from)
4. The current prevalence of IOPVs, both in theory as well as in practice, and the current state of its field of research
5. The diversity of IOPVs (in which varieties they come)
6. The distinctiveness of IOPVs, and their implications for the people and organizations involved in them.

I will in the following elaborate on each of these areas, which all cover a different angle toward the IOPV phenomenon.

7.1 Organizational Learning Theory

One of the broad, overarching interests of the present research was with organizational learning theory. Evolutionary economics sets forth a compelling argument that the survival and growth of organizations is to an important extent determined by firm-specific competencies and dynamic capabilities (e.g. Dosi, 1982; Nelson & Winter, 1982). Such competencies and dynamic capabilities are the result of learning processes (like experience accumulation, knowledge articulation and knowledge codification, Zollo & Winter, 2002) that determine the firm's ability to integrate, build, and reconfigure itself to address rapidly changing environments (Teece et al., 1997: 516). While the dominant theories of organizational learning cater for the fact that economic activities are increasingly crossing the boundaries of formal organizations (Sinha & Van de Ven, 2005), the nature of collaboration is in such theories with little exception viewed as a stable and open-ended process (Schwab & Miner, 2008). In IOPVs, however, the nature of collaboration is temporary. More specifically, IOPVs revolve around temporary systems of functionally interdependent but legally autonomous organizations that cooperate to complete pre-defined project tasks in an ex ante (contractually) defined limited amount of time (Jones & Lichtenstein, 2008). This discontinuous logic strongly challenges the supposedly systematic process of how organizational operating routines slowly evolve by learning through continuous performance feedbacks (Zollo & Winter 2002).While anecdotal evidence suggests that some organizations manage to develop durable capabilities and learn through running projects, many do not.

From my dissertation, two conclusions can be drawn regarding such theories.

1) Organizational learning from projects is strongly specific to particular project contexts. While the body of research on project-based learning has greatly extended our understanding of this process, it has also yielded a number of ambivalent findings (Chaston, 1998). Scarbrough et al. (2004), for instance, found that the degree and kind of learning taking place in two projects at a water supply treatment organization and a

construction firm were entirely different from one another with respect to learning boundaries. As a consequence, several studies have concluded that one of the crucial, and thus far ill-understood, drivers of project-based learning are the specific project contexts in which the learning process takes place (see Prencipe & Tell, 2001; Scarbrough et al., 2004: 1597). In fact, Prencipe & Tell (2001), one of the seminal works on the subject matter, concluded that the current research on project-based learning "calls for some kind of contingency analysis where variables such as size, strategy, task complexity [..] etc. are related to the effectiveness of inter-project learning mechanisms" (p. 1391). This dissertation took up this challenge by a multi-method examination of different types of IOPVs, and comparing the learning mechanisms between them. This demonstrated that different learning mechanisms were more prevalent and effective in particular kinds of projects. Experience accumulation and knowledge creation, for instance, was found to be most prevalent in projects that resemble the Mini One-off type, which are amongst others characterized by small size, highly unique tasks and a low degree of prior ties between the partners. Knowledge articulation and sharing within projects, however, was particularly prevalent in projects that resemble the Outsized Insulated type, which are amongst others characterized by large size, intermediately unique tasks, and a separate legal entity and location, because such projects can be insulated to act as "total institutions" that are characterized by high levels of inter-person interaction and a strong project culture that enables the articulation and sharing of knowledge. Knowledge codification and the external transfer of knowledge, finally, was found to be particularly prevalent in IOPVs that resemble the Routine Informal type, which are amongst others characterized by routine tasks, high organizational embeddedness, and a lack of formal legal status.

An interesting implication, in this regard, is that this non-uniform perspective toward organizational learning from projects also uncovers a number of paradoxes in project-based learning. For one, the same characteristics that make projects that resemble the Mini One-off type very suitable for novel experience accumulation and knowledge creation (highly unique tasks, small size, and few prior ties between the partners involved), subsequently hinder the articulation and transfer of knowledge. Similarly, the same characteristics that make projects that resemble the Outsized Insulated type of inter-firm projects highly suitable for knowledge articulation and sharing within the project (insulated nature, temporary total institution), subsequently create a learning boundary to transfer the knowledge outside the project. Finally, the same characteristics that make projects that resemble the Routine Informal type good at transferring knowledge outside of the project (routine nature of task, no formal legal status, weak project boundaries), also hold the risk of some knowledge unintentionally leaking away even when this is not desirable. I believe that the identification of such paradoxes, and the way to resolve them, are an interesting theoretical contribution of this dissertation, and an area of research where future work could build upon further.

2) Organizational learning is in many instances an unintended and emergent process, rather than deliberate and planned. My dissertation suggest that a substantive amount of project-based learning happens through unintended learning, either from rare events and partial project failures, or through accidental leakage. In both instances, the process of learning taking place was characterized as being a haphazard and emergent process that was forced upon the organization, rather than deliberately designed or planned. This finding has a number of important theoretical implications. For one, it suggests that leaning might be less of a systematic, deliberate process than the way it is usually portrayed in the literature on organizational learning and in project management (e.g. Cacciatori, 2008; Zollo & Winter, 2002). Instead, this study indicates that in the context of inter-organizational projects, with all the uncertainty in terms of task and partners they involve, deliberate learning mechanisms might prove to be extremely costly and uncertain to implement and maintain. Organizations involved in inter-organizational projects rather seem to in many instances learn by unexpected events or failures imposed by rapidly changing conditions. Such unintended learning is closer to theories of bricolage and improvisation (e.g. Baker et al., 2003; Baker & Nelson, 2005) than it is to the kind of systematic, deliberate learning that can be found in evolutionary economics and project management. This finding does not negate recent theorizing on repeatable solutions and economies of repetition that have been proposed in the context of project-based learning (e.g. Brady & Davies, 2004; Cacciatori, 2008; Davies & Brady, 2000). My study in fact supposes that for one dominant type of projects, this might actually be exactly what might be happening. Rather, this research indicates that the process whereby learning actually happens in at least some project-based firms is more uncertain, and less designed, than what studies of deliberate learning have suggested. In short, my research suggests that instead of "learning", in many project contexts organizations seem to "get learned" by the unexpected or non-routine events that their projects lead them to.

7.2 Nature

As I noted before, this dissertation also started to attempt to bridge the fields of inter-firm relations and networks with that on projects and project management through a study of IOPVs. As mentioned, while IOPVs are perhaps most directly a specific kind of project (Söderlund, 2004a), they are equally a specific kind of inter-firm collaboration (Jones & Lichtenstein, 2008). While IOPVs thus seem to be sub-categories of inter-organizational relations on the one hand, and projects on the other, they are by their distinctive features different from both alliances (as a prime kind of inter-organizational collaboration) and in-house projects (the most studied kind of projects). To the alliances literature, IOPVs, by virtue of their temporariness, contribute an explicit focus on the temporal dynamics involved in inter-firm collaboration. To the projects literature, IOPVs, by virtue of their multi-partnerness, contribute an explicit focus on the inter-firm

dynamics involved in project work. In my dissertation, I tried to draw upon crucial insights from both fields of literature in order to understand and explain IOPVs. An overall interpretation of the main conclusions regarding their nature yields the following observations, in which I initially take a project perspective.

Much has been written about the nature of projects (e.g. Goodman & Goodman, 1976; Jones & Lichtenstein, 2008; Lundin & Söderholm, 1995; Söderlund, 2004a). It seems that over the years there have emerged at least two positions. Some authors, such as Goodman & Goodman (1976), but also Ibert (2004) and the PMBOK have emphasized that projects are in general "almost unique" (Goodman & Goodman, 1976: 495), solving unique tasks (Ibert, 2004), between "strangers" isolated from prior and future sequences of activity (Meyerson et al., 1996). This is a position that is found in the literature more often, as many (e.g. Lindkvist et al., 1998; Gann & Salter, 2000; Meyerson et al., 1996) have also referred to the one-off and exceptional qualities of projects. Others (e.g. Engwall, 2003; Lundin & Söderholm, 1995) have started to question this notion as in the words by Brady & Davies (2004: 1605) "it equates project-based activities with non-routine behaviour", whereas often "firms undertake 'similar' categories of projects [..] involving repeatable and predictable patterns of activities". Moreover, work in the movie industry (Bechky, 2006; Jones 1996) has made the case that projects are executed within dense networks of enduring inter-personal relations, rather than being lonely, stand-alone ventures. This debate on the nature of projects was yet to be resolved.

One of my central conclusions after undertaking the research underlying this dissertation is that although there appears to be considerable variation on their most important dimensions, **far most IOPVs have highly routine elements, both with regard to task recurrence (i.e. they solve repetitive tasks), and relationship recurrence (they are embedded in prior ties between the partnering firms).**

This finding implies that the aforementioned view of inter-organizational projects as being unique entities in all aspects should be questioned. In turn, it provides empirical support for some of the emerging theories of project-based learning (e.g. Brady & Davies, 2004; Grabher, 2004a; Cacciatori, 2008) and network coordination (Jones, 1996; Jones & Lichtenstein, 2008) which have staked the claim that routine tasks and embeddedness in latent networks between the partnering organizations provide a suitable pretext for knowledge transfer from projects to subsequent other projects (project-to-project learning), and to the organizations involved (project-to-organization learning), and for projects to be coordinated through reputation and other relational types of governance (Jones et al., 1997). In addition, it indicates that whereas the flexibility to frequently change partners has been forwarded as one of the main advantages of inter-organizational projects over more stable forms of collaboration (Schwab & Miner, 2008), firms seem to only make use of this opportunity to a limited extent. Rather, the repetitiveness of IOPVs I find (both with regard to their task and their partner choice) underlines the importance of Brady & Davies' call to take seriously the possibility that many organizations undertake similar project ventures over time, in

which tasks and partner choice stay constant over multiple projects. As such, these findings draw attention to the possibility that many IOPVs are in fact embedded in what Sydow & Staber (2002) have deemed "latent networks", in which inter-organizational ties between firms are dormant for some of the time, but are then routinely activated in order to accomplish a specific project or task. This implies quite a different nature of project-based organization than the aforementioned work which has tended to stress the unique, one-of-a-kind nature of projects as given. Moreover, it has implications for project portfolio management, since conducting tasks with known partners enables the choice for informal governance (e.g. trust) over formal governance mechanisms (e.g. extensive contracting) (Das & Teng, 1998).

A second important conclusion regarding the nature of IOPVs concerns that I find that **most IOPVs have a relatively short longevity, as the majority of project ventures has a duration of less than one year, and, in particular, that many of them concern multi-party systems, including three or more partnering organizations.** Especially the latter point is salient, as the literature on multi-partner alliances and consortia (e.g. Das & Teng, 2002; Lavie et al., 2007) proposes that the dynamics involved in collaborations of three or more legally independent parties are fundamentally different from those found in dyadic relation between just two. Das & Teng (2002), for instance, suggest that in multi-partner collaborations social exchange is generalized rather than direct, relying on generalized (rather than direct) reciprocity, and social sanctions and macro cultures (rather than formal contracts) in order to be successfully managed. Lavie et al. (2007) propose that the multilateral nature of collaboration in multi-partner collaborations asks for more complex governance, and that in contrast to dyadic collaborations, parties in such collaborations are more likely to receive different returns from participation.

The changed perspective on the nature of IOPVs that comes from the empirical findings also has important practical implications. For one, since most IOPVs appear to be routinely executed by organizations that have a history of working together on prior projects, project management in such ventures should shift emphasis to the management of long-term relations between the partnering organizations, from a pre-eminent focus on ad hoc contracts specific to one project (Dahlgren & Söderlund, 2001).

7.3 Antecedents

A central element of the research question underlying this dissertation concerned the question of where inter-organizational project ventures come from. This question was borne from the fact that despite the host of scholarly attention to project-based forms of organization (Chapter 2), and its significant prevalence in multiple industries (Chapter 3) we knew relatively little of why organizations are increasingly engaging in IOPVs (Söderlund, 2004b). What we did know was primarily based on anecdotal and case study evidence, which was a natural first step for researchers interested in starting to

answer this question. Through the systematic large sample data that I brought to bear on the question of where IOPVs come from, a number of conclusions can be drawn.

A first element concerns that IOPVs are predicted from multiple levels of analysis. In other words, **their genesis lies most directly within firms, but also in the wider institutional and industry environments in which they are embedded.** In other words, *both* the firm and industry level of analysis together have significant explanatory power for IOPV participation, and both should be included in our efforts to understand this important process. Rather than a quest for pinpointing which of the levels has *most* explanatory power (cf. Short et al., 2009), this finding indicates that both the firm and the industry levels are important and should be included in our understanding of inter-organizational project venturing. This conclusion is mainly based on the strong effects of market uncertainty (chapter 4) on the likelihood of firms to engage in IOPVs.

A second important conclusion concerns that for IOPV participation, **there appear to be crucial differences between the antecedents underlying the propensity for organizations to engage in one IOPV ("whether" organizations engage in an IOPV at all), and those underlying the subsequent number of IOPVs they engage in concurrently (when an organization does engage in one or more IOPVs, the size of their portfolio).** This distinction between "whether" organizations collaborate at all and if they do, the subsequent "number" of concurrent collaborations they have, is a distinction that is rarely made, even in other types of inter-firm collaboration studies, but might seem crucial as between the two different dynamics appear to be in play. This having said, I can only claim this with regard to their antecedents (the main empirical focus of chapter 4).

This finding has important similarities to the work on alliance portfolios (Wassmer, 2010), which has as a fundamental premise that alliance portfolios are fundamentally different from individual alliances, and more than just a sum of their parts (Ozcan and Eisenhardt, 2009; Faems et al., 2005). In particular, it has been noted that they generate returns above and beyond those of the sum of the individual alliances (Duysters & Lokshin, in press) but also that they require a portfolio approach from alliance managers (Rothaermel & Deeds, 2006). Whereas the predominant work on alliance portfolios has focused on outcomes (such as performance, Wassmer, 2010), my findings bolster the same premise, but for the antecedents side: participation in portfolios of, in my case, IOPVs, are a function of a different constellation of antecedents than participation in an individual IOPV. By implication, to go out and collaborate in one IOPV is different from the decision to add additional IOPVs to the portfolio when that initial step has been taken. This underscores and extends one of the central premises of the portfolio literature: to enter into a single collaboration is qualitatively different from entering into a portfolio of multiple collaborations (see Duysters & Lokshin, in press; Ozcan and Eisenhardt, 2009).

7.4 Prevalence in Theory and Practice

A clear conclusion from my dissertation is that inter-organizational types of project-based organization are "hot" these days, both in theory as well as in practice. In fact, through my systematic literature review, I found that **the research on temporary organizational forms can be identified to be a distinct field of research, and that it is currently growing at an exponential rate** (Figure 2.1 on p. 16). In fact, I found that in the last decade (1998–2008), 61 works with an explicit focus on temporary organizational forms were published in books and ISI-indexed journals, against 18 the decade before (1988–1998), which constitutes an increase of 339%. A caveat is that this rapid growth has come with a downside, namely a fragmentation in theory and findings, something which my efforts in the first part of my dissertation have tried to confront.

With regard to the prevalence of IOPVs in practice, I would first say that given the amount of references to an increasing prevalence of temporary, project-based modes of organization, it is quite surprising that there appear to be so few systematic, large scale empirical studies undertaken to assert the veracity of this claim. I know of only one prior attempt that can be characterised as such, which concerns the study by Whittington et al. (1999).

My conclusions after undertaking a large scale quantitative study on exactly this question (reported in chapter 3) are that there are strong grounds that indicate that the total number of IOPVs among SMEs is relatively high and stable, even despite the global economic downturn in 2009 and 2010. Below this stable surface, however, one can see that this stability is actually the result of two contrasting dynamics, which partly overlap with the aforementioned distinction between "whether" organizations collaborate, and if they do, the subsequent size of their portfolio of collaborations. Specifically, my analyses indicate that one should distinguish between two forms of prevalence: the *number of firms* that engages in IOPVs, and for those who do, the *number of IOPVs* they engage in. With regard to the former, I conclude that fewer organizations engaged in IOPVs in 2009 than in 2006. Countering much contemporary writing, IOPVs seem to be undertaken by fewer organizations, not more. This trend was witnessed along almost all industries, and held when I controlled for the negative trend in inter-organizational collaborations of all kinds.

With regard to the latter kind of prevalence (the amount of IOPVs), I found among the group of organizations that does engage in IOPVs an increase in the number of IOPVs per firm. **As a result, IOPVs seem to be becoming increasingly densely concentrated: fewer organizations engage in them, but those who do, do so more.** The main conclusion with regard to the prevalence of IOPVs is that **when these dynamics are combined, the overall prevalence of IOPVs is stable, and that they account for a significant portion of economic activity.**

These conclusions tie into a trend: we find ourselves in a networked economy, in which the boundaries between organizations are increasingly being blurred (Sinha & Van de Ven, 2005), and projects are increasingly undertaken by multiple organizations rather

than in-house (Maurer, 2010). Moreover, this conclusion goes some way in legitimizing the recent research attention to inter-organizational projects (Jones & Lichtenstein, 2008; Söderlund, 2004a) by demonstrating that they are in fact an empirically "real" phenomenon. This is important, as it establishes a link between our recent theorizing and the current developments in project organization practice. Given the fact that the research attention to IOPVs might be increasing, but is still markedly small in an absolute sense, I would on the basis of these findings also call for future research to grant more explicit attention to inter-organizational forms of project organization.

Moreover, my research in this area points to an important managerial implication; because a clear finding of the study is that there is specialization taking place (among the group of organizations that engages in IOPVs the amount of concurrent inter-firm projects is rapidly increasing), this by default means that these kinds of organizations need to manage project portfolios that are increasing in size and complexity. Whereas the successful execution of one project can already be a challenge, the challenge of successfully managing and executing multiple simultaneous projects with different partners can be even more of an ordeal (Wassmer, 2010). There is, in other words, an increasing need for these organizations to engage in *project portfolio management* (e.g. Gerwin & Barrowman, 2002). Although research on project portfolios goes back to seminal works as early as Gareis (1989), Engwall & Jerbrant (2003) recently mentioned that our knowledge of the complexities of multi-project portfolio management is still scarce. Moreover, our predominant knowledge of project portfolios pertains to managing a bundle of in-house projects, rather than inter-organizational projects. My dissertation research thus gives a strong impetus for future research to more closely study the added complexity involved in managing a portfolio of simultaneous projects with different partners, and for organizations that are confronted with growing project portfolios to resolve this complexity, by actively creating overlap and interaction in their project portfolio and manage these by formal tools (see Gerwin & Barrowman, 2002).

7.5 Variety

An important conclusion from my dissertation research concerns that **there is multi-dimensional empirical variation between different kinds of inter-firm project ventures.** Moreover, it is the multi-dimensional configuration of these dimensions which has important implications with regard to project-based learning. As I mentioned in chapter 5: project ventures are both unique and routine, combinations of exploration and exploitation, of learning and forgetting. As such, it appears that some of the previous work in the field has been one-sided in its approach, framing project ventures as unique or routine, exploitation or exploration.

More specifically, my research indicates at least three types of IOPVs (of which one could make a more fine-grained sub-classification):

1. Routine Informal. By far the most prevalent class of IOPVs (62%) concern the kind of routine, small stake temporary project collaborations in which organizations frequently engage on a day-to-day basis. They are informal, solve mostly routine tasks, and demand a relatively low financial investment. I referred to this type of IOPV in Chapter 5 as "Routine informal". The prevalence of exactly this type of IOPV emphasizes what was said with regard to the nature of IOPVs above: far most of them have highly routine elements, both with regard to task recurrence (i.e. they solve repetitive tasks), and relationship recurrence (they are embedded in prior ties between the partnering firms).

This type seems close to what Sydow & Staber (2002) deem "latent networks", in which ties between firms are dormant for some of the time, but are then routinely activated in order to accomplish a project or task.

2. Outsized Insulated. The second type of IOPV I found is less prevalent than the first, and slightly more prevalent than the third, with 22% of the IOPVs in the sample belonging to this configuration. These IOPVs are big, long-lasting, have a large budget, and organizations tend to only engage in this kind of projects with well-known partners. Compared to the other types, they are amongst others bigger, have longer duration, and have a bigger budget. Moreover, they have, in addition to this, a higher amount of prior ties between partners than the other types. Moreover, these projects often tend to be formed as independent legal entities that are likely to have their own geographical locations. Hence the name "Outsized Insulated"

3. Mini One-off. The third configuration in the empirical taxonomy of temporary IOPVs that I developed in my dissertation concerns what is often envisioned as the most "classical" example of temporary collaboration. This kind of IOPV is small, of short duration, performs highly unique tasks, and it has a one-shot exchange character in that it tends to include relative strangers: organizations which have no prior history of working together. I refer to this type of project venture as "Mini one-off". They resemble what some have framed as the ideal type temporary organization (Goodman & Goodman, 1976), or what has been referred to as the equivalent of an "organizational one-night stand" (Meyerson et al., 1996). In and of itself, the fact that this kind of IOPV is the least prevalent is intriguing, given the view by some that this kind of IOPV is the dominant form of temporary organization (see Engwall, 2003 on this).

Besides learning, there are many other terrains where a configurational perspective toward inter-firm projects could enrich and refine our current understanding of temporary organization. Consider, for instance, the debate on swift trust versus stable routines as coordination mechanism in projects (Bechky, 2006; Jones & Lichtenstein, 2008; Meyerson et al., 1996). It is up to future work that will take these, and many other areas, one step further by including a configurational perspective in a more fully fledged theory of temporary and project-based organization.

7.6 Distinctiveness and Implications

The final important conclusion that I draw regarding the research question and the multi-method approach that I utilized to answer it, pertains to the distinctiveness and implications of temporary organization.

As noted from the outset of this dissertation, we know relatively little about the role of temporariness for (temporary) projects. It is somewhat ironic that a field as prevalent and important as project-based organization has paid so little empirical attention to *the* phenomenon that sets it apart from other types of organization: the temporary nature of its main unit of economic action, the project.

My conclusion with regard to the distinctiveness of temporary forms of organization is that there are strong empirical grounds to assume that **temporary organizational forms *are* different from open-ended forms of organization by virtue of their temporariness, and that their limited shadow of the future alters the dynamics found within project teams.** Specifically, the experiments reported in chapter 6 demonstrated marked differences between temporary and open-ended teams with regard to time perspective, task immersion, and processing of information, and temporariness emerged as an important moderator of the relation between team conflict and team cohesion. These findings could, in my view, have major implications for the legitimacy of the field, which has thus far struggled to position itself as a distinct field of research, worthy of explicit scholarly attention (e.g. Bakker, 2010).

It is interesting to confront the findings on the effects of temporariness within a given project, to those presented earlier on IOPVs often being embedded in prior relations between the partners. While temporariness thus seems to have effects on the level of a given project, I can at this point in time only guess to what extent the effects of temporariness might be mitigated by the repetitive nature of (most) inter-organizational projects. This would be an interesting venue for future research.

The second conclusion I draw regarding the distinctiveness and implications of IOPVs concerns the diversity of methodologies that can be used to assess the distinctiveness question. As I mentioned in Chapter 2, the vast majority of studies in the field of project management and project-based organization are qualitative case studies, which have given us a wealth of rich information to draw on (Bakker, 2010). Quantitative studies (like the ones I undertook in Chapters 3, 4 and 5 of this dissertation) are quite uncommon in this field. Experimental designs (like in chapter 6) are rare. This is a pity to the extent that experiments can give insights in matters surrounding questions of causality and internal validity that other studies cannot (Grant & Wall, 2009). Moreover, experiments are well suited to empirically isolate the temporal dynamic of project-based organization that stood central in the present study, but which is in need of much more concerted research attention (Jones & Lichtenstein, 2008). The present dissertation offered but one way to operationalize the slippery concepts related to time and temporality, and more experimenting in the domain of project management would help to enrich its methodological tool box in order to gain a deeper, and more internally

valid, understanding of the specific consequences of temporal dynamics for projects. While such a multi-method approach seems generally desirable, in this dissertation it also proved to sometimes be difficult to integrate the findings and conclusions from these different approaches into a unifying framework. The present chapter was my attempt at doing so, but future work remains to be done. In fact, let me in closing emphasize that it is up to future research to further develop and refine the claims made in this exploratory study, in order to come to a more complete understanding of temporary and project-based organization. The rapid developments in the current economy certainly deserve that much.

7.6 Conclusion

I have thought long and hard about what I would put here, as "famous last words" upon the completion of this project. While they are not my own words, the following, in just one sentence, sums up quite nicely my feeling when looking back:

I may not have gone where I intended to go, but I think I've ended up where I needed to be.

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* Indicates that particular study is part of the literature sample of chapter 2

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